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Taking Action Against the Rising Tide of Marine Plastic Pollution.

A Case Study of the Surfrider Foundation.

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by

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ABSTRACT

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This thesis analyzes the so-called “wicked problem” of plastic pollution, breaking it down into its main causes, actors, and challenges, while focusing on the role that NGOs, in particular, the Surfrider Foundation, have in fighting it. Currently, the plastic pollution tide is on the rise, and a relatively new culture centered on “disposable and throw-away items”, aka single-use plastics, seem to have taken over in our daily life. However, this thesis shows that there are many actions that different actors can take to limit the current plastic dependency and overconsumption and reduce the rates of plastics entering our oceans each year.

To better understand the role that the Surfrider Foundation has in fighting back against this plastic crisis, I interned for its Huntington Beach and Seal Beach (CA) chapter from September to December 2017. I had the opportunity to analyze the main mechanisms which drive the work of this non-profit organization, the Foundation’s main programs and initiatives in relation to ocean plastic pollution and the relationship that Surfrider has with other actors and stakeholders. According to my findings, the main influence that the Surfrider Foundation has in “contrasting” the expansion of plastic pollution lies in its educative role and in its efforts to raise awareness among communities on the issue, inspiring them to take direct action as individuals and further on, demanding governmental and business intervention as well. Moreover, often as part of wider partnerships and in

coalition with other NGOs and activists, Surfrider also tries to affect local legislation, and ideally, state-wide and global policies, as well.

Indeed, the power of public ideas and public activism should not be underestimated. As demonstrated, education and public mobilization can lead to important environmentally-friendly legislative changes at the local and state-level, which together with a bigger movement and discourse around plastic pollution, can lead to important global achievements as well. Currently, we are witnessing this mechanism in action: strong global "momentum" around the issue has been created through the efforts and joint collaboration of many ENGOs and activists, including the Surfrider Foundation, leading to the interventions of other key actors, such as governments, consumers, and businesses. The hope is that through a meaningful, multilateral, and integrated fight we can substantially reduce plastic pollution.

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I. INTRODUCTION

"Because 96 percent of the water on earth is in the ocean, we have deluded ourselves into thinking of the seas as enormous and indestructible. We have not considered that earth is a closed system. Once destroyed, the oceans can never be replaced. We are obliged now to face the act that by using it as a universal sewer, we are severely over-taxing the ocean's powers of self-purification. The sea is the source of all life. If the sea did not exist, man would not exist. The sea is fragile and in danger. We must love and protect it if we hope to continue to exist ourselves."[1]

Jean Jacque Cousteau, one of the greatest and most prolific ocean researchers the world has ever known, asserted this in the 1970s. Fifty years later, these words are still terribly true and timely, reflecting a reality which has been overlooked for far too long. Today, the world's oceans are more under siege than ever before, facing imminent every-day threats which are constantly and increasingly undermining their well-being. Now as then, our waters face strong, environmental pressures from the increasing population. Meanwhile, existing multilateral efforts and legislation concerning the topic have failed to accomplish any substantial achievement. The ocean waste crisis has taken the front stage together with severe pollution, death of ocean ecosystems and climate change, demanding attention and effective action from the global community.[2]

Among the several factors threatening our oceans, that of plastic pollution seems to be extremely time-sensitive and to have catalyzed public attention and debate over the recent years, raising awareness and creating global momentum. This thesis aims to address

[1] Cousteau, Jacques. "Our Oceans Are Dying." *New York Times*, November 14th, 1971 cited in Ringius, Lasse. *Radioactive Waste Disposal at Sea: Public Ideas, Transnational Policy Entrepreneurs and Environmental Regimes*. The MIT Press, 2001, p. 79

[2] Kong, Jason, and Sara A. Cooley. "An Untapped Resource for Intergovernmental Organizations: Ocean Waste Environmental NGOs." *International Journal* 12, 2016, p. 12

where the power and responsibility to change the current situation lie and what can be done in the short-term to solve the ocean plastic pollution crisis.

In order to better understand the topic and experience first-hand most of the hardships and complications faced by activists and policymakers engaged in addressing this issue, I completed an internship at the Surfrider Foundation last fall. The Surfrider Foundation is an international, non-profit, environmental organization, which has a strong presence both across the United States and abroad. My goal was to analyze the Foundation's daily efforts and activities, main programs and major accomplishments, in order to understand how and with which mechanisms a local grassroots organization with a global vision attempts to play a consistent role in reducing the problem of ocean plastic pollution. Hence, my research was originally focused on the following question:

In what ways can a volunteer-led grassroot NGO such as the Surfrider Foundation make a dent in a wicked global problem[3] *as large and intractable as ocean plastic pollution?*

During the course of my research, it became evident that the Foundation's main goal is to educate, and raise awareness and activism around the issue, in order to succeed in changing local legislation, as well as state-wide and transnational one. However, environmental non-governmental organizations (aka ENGOs) have to constantly face many challenges and limitations when working on these goals, as they must defeat contrasting interests and a lot of opposition along the way. This encouraged me to explore and study the wider framework

[3] In 1973, design theorists Horst Rittel and Melvin M. Webber used the term "wicked problem" for the first time referring to problems that are difficult to define and inherently unsolvable, lacking simplistic or straightforward planning responses.
See Rittel, Horst WJ, and Melvin M. Webber. "Dilemmas in a general theory of planning." *Policy sciences* 4.2, 1973, pp. 155-169; NNSI, "'Wicked' Problems: What Are They, and Why Are They of Interest to NNSI Researchers?" *Network for Nonprofit and Social Impact*, 19 Mar. 2018, nnsi.northwestern.edu/social-impact/nnsi-blogs/wicked-problems-what-are-they-and-why-are-they-of-interest-to-nnsi-researchers/.

of marine plastic pollution and other salient factors relevant to a comprehensive analysis of the issue as well. Thus, I also address the following questions:

Who are the other actors and stakeholders involved in the plastic pollution problem and what actions could they take to tackle the issue? How much can consumers' behaviors be held accountable for the current plastic pollution crisis? Alternatively, to what extent are other actors those to blame? How can we move beyond the many complications that are intrinsic to the nature of the plastic pollution phenomenon in order to produce a long-waited and needed change in plastic consumption rates and waste generation and management habits?

I. A. The ocean plastic pollution crisis

Plastic is used extensively in everyday life. It is present pretty much everywhere as its versatile qualities, such as flexibility, durability, lightness and cheapness, make it the perfect and preferred material to produce most packages, drink recipients, consumer products, and appliances. It is also a major component in all our household goods and cars. Plastics are so deeply rooted in our everyday habits that it is very hard to imagine living without them. Consequently, dealing with ocean plastic pollution and limiting the consumption of this material is a very complex and delicate process.

Indeed, ocean plastic pollution has been categorized as a "wicked problem", originally defined as problems that seem incomprehensible and resistant to solutions, but also complex, unpredictable, open ended, or intractable.[4] At first sight, grappling with wicked problems might seem like taking up lost causes, but it has been argued that by

[4] Churchman, West C. "Wicked Problems." *Management Science,* Vol. 14, No. 4, Application Series, Dec.1967, pp. B141-B142; Rittel, Horst W. J., and Melvin M. Webber. "Dilemmas in a General Theory of Planning." *Policy Sciences, 4*, (1973):155-169 cited in Head, Brian W., and John Alford. "Wicked problems: Implications for public policy and management." *Administration & Society* 47.6 (2015): 712, doi: 10.1177/0095399713481601

"decomposing their challenging features into more nuanced categories and seeking to understand those governmental factors that make them especially difficult for policy makers, public managers, and policy scholars to address, it is possible to adopt a more hopeful stance in respect of wicked problems."[5]

Therefore, this research aims at breaking down the wicked problem of ocean plastic pollution. First, it identifies the main actors and causes involved in the phenomenon, addressing the main shortages and offering possible actions to address the issue. Then it identifies the main items responsible for ocean plastic pollution, considering their origins and implications. This makes it possible to work from concrete and observable problems to identify customized solutions for specific polluting objects, taking into consideration potential actions and strategies that different actors can undertake and enforce to prevent them from reaching the ocean.

Most of the plastic comprising the marine plastic pollution is in fact embodied by single use plastic items: bottles, cups, straws, coffee lids, cutlery, bags, cigarette filters, different types of packaging, and so on. Given the prominence and high rates of collection of these items on the beach and in the water, I believe that starting a debate and taking initial actions addressing these specific items as a first step, by restricting their overconsumption, switching to greener alternatives and improving their disposal management, would lead to an important reduction in the volume of plastic entering our oceans each year. This is the strategy that has been used in California for the bag ban and that is currently being used by Surfrider and many other NGOs to obtain legislative victories on other items as well.

[5] Head and Alford, 2015

By breaking down the ocean plastic pollution issue into all its components, complications and policy challenges and analyzing which are the actions already in place and which are still missing in order to get a handle on the most crucial pollutants that need to be kept under control, we are able to better understand the "wicked problem" and give it a "tractable" appearance, giving us hope for effective solutions and a better future.

I.B. Why is ocean plastic pollution relevant to global studies?

Human beings have always had a vital and close relationship with the ocean, which is crucial for human survival. Oceans, covering 70% of the earth's surface, comprise the most important environmental zone and global common, which enables human beings to maintain ordinary global environmental conditions, while ensuring sustainable human development.[6] Oceans, indeed, ensure carbon sequestration, climate regulation, and primary production, making life possible on our planet.[7] In addition, a vast majority of human activities are directly or indirectly linked to and dependent on our oceans, including shipping and transportation, fisheries and food supply, recreation and tourism, and offshore exploration for minerals and petroleum. Consequently, oceans play a key role in the everyday life of global citizens and are a vital component both to our survival and to the transnational economy of many, if not all, countries in the world.[8],

Unfortunately, all the functions that our oceans perform are at stake, due to the devastation to which they are subjected, resulting from plastic pollution all around the world. The excessive production, use, and consumption of plastic items and single-use plastics in particular, which characterize everyday-life habits in most human societies

[6] Miyazaki, Nobuyuki, et al., editors. *Mankind and the Oceans*. United Nations University Press, 2005, pp. xi, xii
[7] Holland, Geoff, and D. T. Pugh, editors. *Troubled Waters: Ocean Science and Governance*. Cambridge University Press, 2010, pp. 1-2
[8] Ibid.

today, are no longer sustainable and pose an imminent threat to our oceans, coastal communities, food chain and, potentially, even to our own health. [9]

Although official sources and the most prominent scholars on the subject currently state that 8 million tonnes of plastic debris enter our oceans each year,[10] the original study from which this figure is taken actually states that the volume of plastic entering our seas yearly may oscillate between 4.8 and 12.7 million tonnes[11].

Half of all the plastic ever produced has been generated in the last 13 years[12] and most scholars and scientists agree that current rates of plastic production and consumption are expected to keep growing, together with the amount of plastic debris entering the ocean per annum. If current rates do not change, scientists forecast that by 2050, the weight of plastic in our oceans will outnumber the weight of fish.[13]

Although recycle and incineration rates have registered a slow increase, total consumption and waste generation are not expected to experience any relevant reduction or slow down, as shown in the next two figures[14]:

[9] Barclay, Eliza. "How Plastic In The Ocean Is Contaminating Your Seafood." *NPR*, NPR, 13 Dec. 2013, www.npr.org/sections/thesalt/2013/12/12/250438904/how-plastic-in-the-ocean-is-contaminating-your-seafood.
[10] Mwangi, Patrick. "An Estimated 8 Million Tons of Plastic Waste Enter the World's Oceans Each Year." *UN Environment Assembly*, 16 Oct. 2017, web.unep.org/environmentassembly/estimated-8-million-tons-plastic-waste-enter-world's-oceans-each-year-0.
[11] Jambeck, Jenna R., et al. "Plastic waste inputs from land into the ocean." *Science* 347.6223, 2015, pp. 768-771. doi: 10.1126/science.1260352
[12] Geyer, Roland, et al. "Production, Use, and Fate of All Plastics Ever Made." *Science Advances*, vol. 3, no. 7, 2017. doi:10.1126/sciadv.1700782.
[13] Wearden, Graeme. "More Plastic than Fish in the Sea by 2050, Says Ellen MacArthur." *The Guardian*, Guardian News and Media, 19 Jan. 2016, www.theguardian.com/business/2016/jan/19/more-plastic-than-fish-in-the-sea-by-2050-warns-ellen-macarthur.
[14] Geyer, 2017
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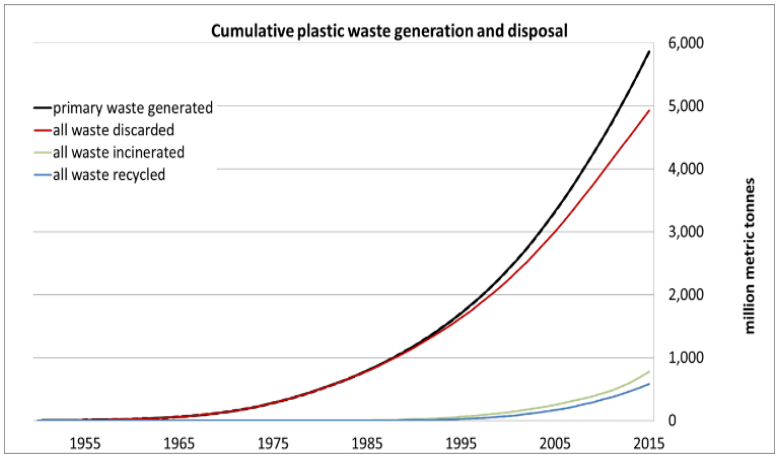

Fig.1

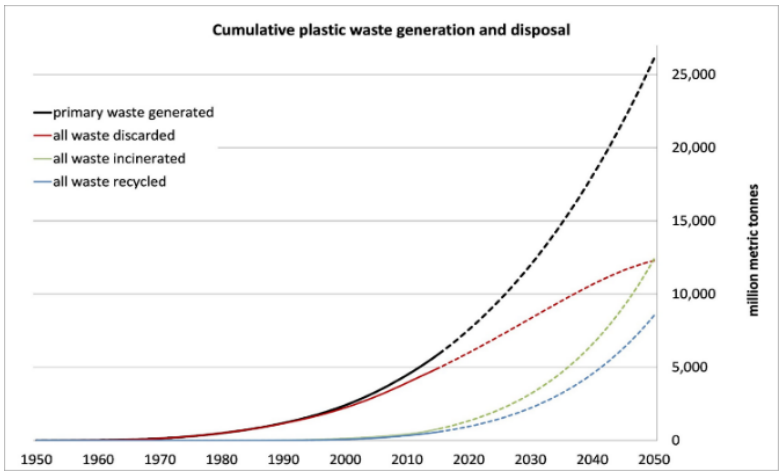

Fig.2[15]

Moreover, recycling and incineration are facing critiques and other environmental-related concerns as well and cannot be considered "pure green solutions" either, as I will explain further on.

Obviously, plastic volumes, together with beach and water pollution, vary depending on countries, beach location, tourist season and the popularity of the beach. Nevertheless, the recent discovery of record levels of microplastics in Artic ice[16] is tangible proof of the severity and globality that the plastic pollution crisis has reached. The ubiquitous presence of plastic in the environment is now so undeniable that some scholars have suggested

[15] Figure 1 and Figure 2: Geyer, 2017

[16] Taylor, Matthew. "Record Levels of Plastic Discovered in Arctic Sea Ice." *The Guardian*, Guardian News and Media, 24 Apr. 2018, www.theguardian.com/environment/2018/apr/24/record-levels-of-plastic-discovered-in-arctic-sea-ice.

plastic debris to become the potential geological indicator of a new era, the Anthropocene, which should be distinguished from the Holocene due to the profound human impact on the environment.[17]

Although different countries are responsible for contributing to the problem in different measures, the transnational origin and nature of the problem of plastic pollution cannot be denied, so a future resolution of the issue requires transnational solutions. Currently, massive rates of "mismanaged waste" (defined as "material that is either littered or inadequately disposed"[18] voluntarily or involuntarily) are the responsibility of both advanced countries and developing ones. The need for action might be different in each country, ranging from stricter legislation and consumption reduction, clearly the first step required around the world, to better recycling practices, greener alternatives or improvements in solid waste management facilities in those countries that are lacking the right infrastructure. However, it is indisputable that there is an immediate urgency for governments, industries, services and consumers around the world to address this crisis. We should all have an interest and moral obligation to acknowledge, spread awareness and commit to consistent efforts in order to protect our oceans from this suffocating "plastic-tide."

I.C. Plastic pollution distribution around the world

Obviously, a consistent difference in opportunities and means of action exists among developed (or high income) countries and developing (or low-income) ones in terms of

[17] Geyer, 2017; Carrington, Damian. "The Anthropocene Epoch: Scientists Declare Dawn of Human-Influenced Age." *The Guardian*, Guardian News and Media, 29 Aug. 2016, www.theguardian.com/environment/2016/aug/29/declare-anthropocene-epoch-experts-urge-geological-congress-human-impact-earth.
[18] Jambeck, 2015

their economic resources and the infrastructure available to address the issue, as well as in the estimated numbers of marine plastic pollution that they directly cause.

However, this is exactly the reason why transnational common efforts and plan-of-actions are needed. They can incentivize different countries to support each other and align on a common goal, tackling the issue from multiple perspectives.

The following map and chart emphasize different countries' levels of contribution to the overall volume of marine plastic pollution [19]:

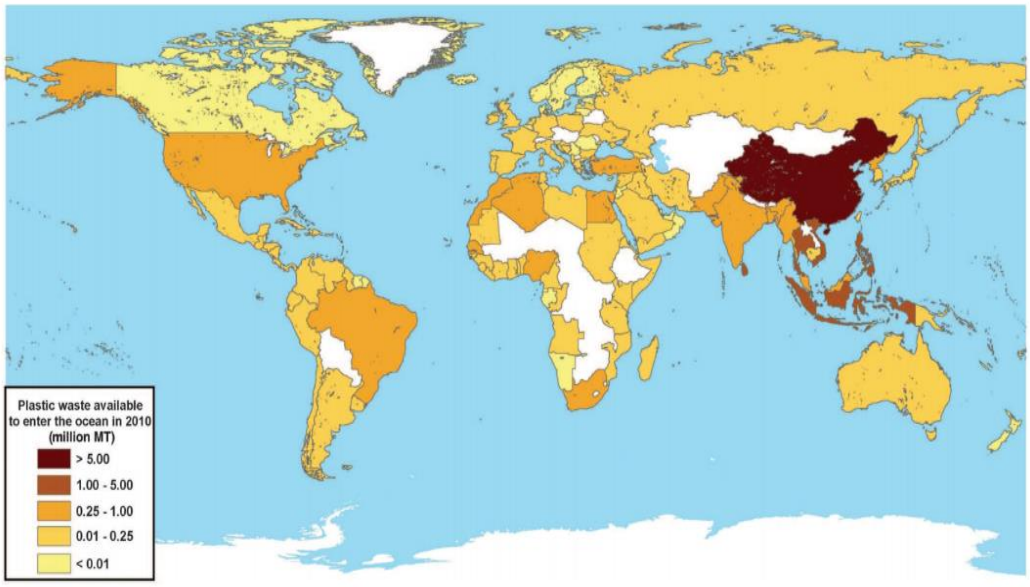

Fig. 1. Global map with each country shaded according to the estimated mass of mismanaged plastic waste [millions of metric tons (MT)] generated in 2010 by populations living within 50 km of the coast. We considered 192 countries. Countries not included in the study are shaded white.

Fig. 3

[19] Jambeck, 2015

Rank	Country	Econ. classif.	Coastal pop. [millions]	Waste gen. rate [kg/ppd]	% plastic waste	% mismanaged waste	Mismanaged plastic waste [MMT/year]	% of total mismanaged plastic waste	Plastic marine debris [MMT/year]
1	China	UMI	262.9	1.10	11	76	8.82	27.7	1.32–3.53
2	Indonesia	LMI	187.2	0.52	11	83	3.22	10.1	0.48–1.29
3	Philippines	LMI	83.4	0.5	15	83	1.88	5.9	0.28–0.75
4	Vietnam	LMI	55.9	0.79	13	88	1.83	5.8	0.28–0.73
5	Sri Lanka	LMI	14.6	5.1	7	84	1.59	5.0	0.24–0.64
6	Thailand	UMI	26.0	1.2	12	75	1.03	3.2	0.15–0.41
7	Egypt	LMI	21.8	1.37	13	69	0.97	3.0	0.15–0.39
8	Malaysia	UMI	22.9	1.52	13	57	0.94	2.9	0.14–0.37
9	Nigeria	LMI	27.5	0.79	13	83	0.85	2.7	0.13–0.34
10	Bangladesh	LI	70.9	0.43	8	89	0.79	2.5	0.12–0.31
11	South Africa	UMI	12.9	2.0	12	56	0.63	2.0	0.09–0.25
12	India	LMI	187.5	0.34	3	87	0.60	1.9	0.09–0.24
13	Algeria	UMI	16.6	1.2	12	60	0.52	1.6	0.08–0.21
14	Turkey	UMI	34.0	1.77	12	18	0.49	1.5	0.07–0.19
15	Pakistan	LMI	14.6	0.79	13	88	0.48	1.5	0.07–0.19
16	Brazil	UMI	74.7	1.03	16	11	0.47	1.5	0.07–0.19
17	Burma	LI	19.0	0.44	17	89	0.46	1.4	0.07–0.18
18*	Morocco	LMI	17.3	1.46	5	68	0.31	1.0	0.05–0.12
19	North Korea	LI	17.3	0.6	9	90	0.30	1.0	0.05–0.12
20	United States	HIC	112.9	2.58	13	2	0.28	0.9	0.04–0.11

*If considered collectively, coastal European Union countries (23 total) would rank eighteenth on the list

Fig. 4[20]

According to the current data, observable in the map and chart above, China, Indonesia, the Philippines, Vietnam, Sri Lanka, Thailand, Egypt, Malaysia, Nigeria, and Bangladesh are the top ten producers of ocean plastic pollution. China leads with a range of 1.32-3.53 MMT/year (million metric tonnes of plastic marine debris per year) followed by Indonesia that has a range of 0.48-1.29 MMT/year and the Philippines with 0.28-0.75 MMT/year. South Africa scores in 11th place and the coastal European states, collectively, rank 18th on the list while the US ranks 20th. It is evident that the developing countries do not dispose of the advanced waste management infrastructures available to advanced countries. As a consequence, they register and cause higher volumes of plastic marine debris despite their lower waste generation rates. In contrast, the United States has a very effective and innovative system for solid waste management, which enables it to achieve a

[20] Figure 3 and 4: Jambeck, 2015

very minimal rate of mismanaged waste, despite its massive waste generation rate (calculated per person, each day), which even doubles that of China.[21]

Thus, a priority for global institutions, advanced countries and intergovernmental organizations should be to address the relevant infrastructure shortages of developing and low-income countries. There is a need for locally based, short-term and goal-oriented plans of action and for tailored financial support aimed at improving the infrastructure network related to management, disposal and recycling of solid waste in different countries. Meanwhile, immediate action to limit consumption rates and waste generation must be taken at the global level, and particularly, in those advanced countries where waste production rates are currently the highest.

Transnational efforts are particularly important if we consider that the unequal conditions and lack of resources that are at the base of the underdevelopment and inability of certain countries to manage solid waste, have been initially created by the economic forces of globalization and the residual effects of their colonization past. Moreover, developed countries' responsibility to help developing countries to catch up on waste management practices and facilities becomes even more evident when considering that most of the recycling burden of many developed countries is shipped overseas to be processed, mostly in China.

However, just recently, China has decided to ban the import of several varieties of foreign solid waste. This has led to a waste management crisis in most of the developed countries that used to rely on it for their recycling processes and that do not have the domestic facilities to take care of their waste on their own.

[21] Ibid.

The US Institute of Scrap Recycling Industries have stated that the ban is disrupting global supply chains, which may lead manufacturers to use new materials rather than recycled ones. Nevertheless, experts also emphasize how the ban has served as a massive wake-up call for countries who relied on China to buy and handle their trash from them, including the United Kingdom, United States, Australia, and Japan. It has caused them to re-think their total consumption, waste production and end-of-life management processes.[22]

Disparities are not only noticeable between advanced and developing countries, but also in the distribution of plastic pollution within the ocean waters. Indeed, 5 garbage patches, also called "ocean gyres", have been discovered in various locations across our oceans. They normally develop in the middle or high sea, due to strong currents and winds that create the conditions for their accumulation in some specific areas. Most of the floating marine debris that accumulates here, is in large percentage plastic, and these gyres are growing in their extension year by year. The largest one, the North Pacific Gyre, has now grown to more than twice the size of the state of Texas and three times that of France.[23]

Moreover, according to a recent study[24], waters and beaches are not the fulcrum of convergence of the massive amount of plastic dispersed in the oceans, as most people might think. Instead, the majority of ocean plastic debris accumulates on the sea-bottom because plastic tends to break down into smaller units, which sink down, without ever disappearing from the environment (if not, assumedly, after an incredible long time). Thus, according to the study, if plastic presence on beaches accounts for 5% of the total marine plastic pollution and pollution on the ocean's surface only accounts for 1%, then 94% of the total

[22] Kottasová, Ivana. "China Trash Ban Is a Global Recycling Wake up Call." *CNNMoney*, Cable News Network, 20 Apr. 2018, money.cnn.com/2018/04/20/news/china-trash-recycling-environment/index.html.
[23] Alfonseca, Kiara. "Great Pacific Garbage Patch More than Twice the Size of Texas and Growing." *NBCNews.com*, NBCUniversal News Group, 2018, www.nbcnews.com/news/us-news/great-pacific-garbage-patch-full-ocean-plastic-keeps-growing-n859276.
[24] Sherrington, Chris. "Plastics in the Marine Environment." *Eunomia*, Eunomia Research & Consulting Ltd, June 2016, www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/.

is to be found at the bottom of the ocean.[25] This fact is highly relevant to this study and to a full understanding of which dynamics can truly solve the plastic pollution crisis.

I.D. Looking for a new paradigm

Plastic pollution represents a complex and multifaceted legacy of old thinking that is crying out for a new paradigm[26]. But in order to find its new archetype, we need to understand all the challenges and complexities that policy makers have to face when looking for alternatives. If living without plastic seems impossible, it is equally vital to acknowledge that our dependence on this material is increasingly leading to large and unbearable impacts on wildlife and ultimately on us, effects that can no longer be sustained or denied. [27] The more we keep postponing any substantial action and provisions against this crisis, the more we are likely to lose the last opportunity to limit the massive damages that we are already causing with our reckless and unbridled consumption of plastic products. A shift to a new paradigm, together with immediate actions against overconsumption, is therefore a priority that should no longer be postponed as it is vital to ensure a better future for ourselves and future generations.

Although conclusive solutions are usually very rare, as Head and Alford remind us, it is possible to frame partial, provisional courses of action against wicked problems[28], which is exactly what I am trying to do in this study.

Nevertheless, as Max Liboiron underlines, when dealing with wicked problems, the way a problem is defined directly affects which solutions are deemed possible, viable, and feasible. Thus, our process of thinking of possible solutions and responses to the plastic

[25] Ibid.
[26] Williams, Veronica. "The Magnificent 7 Elements of Plastics as a 'Wicked Problem'." *Plastic Oceans Foundation*, 6 Sept. 2017, plasticoceans.org/magnificent-7-elements-plastics-wicked-problem/.
[27] Ibid.
[28] Head and Alford, 2015

pollution crisis will be primarily dependent on how we frame and define the problem itself.[29]

According to Liboiron, waste is often defined as "a personal shortcoming", "a vice of individuals or of a class of people, which means that solutions are individual as well". Others, like Vance Packard, "see contemporary waste as a planned aspect of industrial capitalism, placing solutions in economic and regulatory realms."[30]

In my opinion, when dealing with the ocean pollution case it is important to consider both the above aspects and to define and interpret the problem as a multifaceted entity, aiming at a pollution mitigation and prevention processes coming both from individual behavior and stricter policies that can only be obtained through the coordinated efforts of industries and governments. Therefore, in my analysis, I took into consideration three main stakeholder groups, each with a peculiar role in the adoption of viable, long-term responses aimed at an immediate reduction in the current volumes of plastic pollution entering the ocean.

Main categories of actors and stakeholders in plastic pollution		
Civil Society	**Business and Industrial Sector**	**Governamental Institutions**
consumers, activits, NGOs, environmental groups, scientists, scholars, etc.	plastic industry, businesses that work with plastic, "the opposition front" due to economic interests	intergovernamental organizations, local governments, nation-states

I.E. Multilateral vs local efforts and legislative framework

Most of the current efforts to raise awareness and achieve new, stricter legislation to fight back against the current plastic crisis are happening at the local level, driven by the

[29] Liboiron, Max. "Trash Is a Wicked Problem." *Discard Studies*, 22 July 2013, discardstudies.com/2012/12/10/trash-is-a-wicked-problem/.
[30] Ibid.

continuous and passionate work of many NGOs and grassroots organizations, such as the Surfrider Foundation. However, multilateral initiatives and funds aimed at limiting global plastic pollution exist as well, such as those sponsored by the Global Environment Facility, the United Nations[31] and the World Bank[32].

The Global Environment Facility, or GEF, was established on the eve of the 1992 Rio Earth Summit to help tackle our planet's most pressing environmental problems. Along with the UN, it has been the most prominent provider of grants for environmental projects. In its 28 years, the GEF has indeed granted $20 billion and mobilized an additional $88 billion in financing for more than 4000 projects in 170 countries.[33] Today, the Global Environment Facility is an international partnership of 183 countries, international institutions, civil society organizations and the private sector that addresses global environmental issues.[34] Many of its projects are specifically oriented towards international waters, including one in particular focused on plastic pollution.[35] For this project, the GEF pledged to invest $2 million dollars to support the efforts of the Ocean Conservancy's Trash Free Seas Alliance to prevent plastic from leaking into the oceans, while also supporting the efforts of the Ellen MacArthur Foundation's "New Plastics Economy initiative", aimed at moving the entire plastics supply chain toward a circular economy.[36]

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[31] Wahlén, Catherine Benson. "43 Governments and 80,000 Individuals Pledge Action on Plastic." *SDG Knowledge Hub*, 3 May 2018, sdg.iisd.org/news/43-governments-and-80000-individuals-pledge-action-on-plastic-pollution/

[32]World Bank. "Solid Waste Management." *World Bank*, 27 Mar. 2018, www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management.

[33] Global Environment Facility, "About Us." *Global Environment Facility*, 7 May 2018, www.thegef.org/about-us.

[34] Ibid.

[35] Global Environment Facility. "Projects." *Global Environment Facility*, www.thegef.org/projects?views[0][view_dom_id]=9ab181f19d47de08b5aebea9675b707b&views[0][view_name]=projects_listing_search&views[0][view_display_id]=page&views[0][view_path]=projects&f[0]=field_p_focalareas:2209&index_id=main&search_api_views_fulltext=&facet_field=field_p_implagencies&page=1.

[36]Global Environment Facility, "The Ocean Is Everyone's Business." *Global Environment Facility*, 24 Feb. 2017, www.thegef.org/news/ocean-everyones-business.

During the World Ocean Summit of 2017 in Bali, the UN Environment Programme also launched a new global campaign aimed at eliminating major sources of marine litter (mostly microplastics in cosmetics and the excessive, wasteful usage of single-use plastic by the year 2022). The latter, named the #CleanSeas campaign, is urging governments to pass policies aimed at reducing plastic consumption and pollution, targeting industry to minimize plastic packaging and redesign products, and calling on consumers to change their throwaway habits[37].

Nevertheless, mismanaged waste, especially in developing countries, is still high and one of the main sources of ocean plastic pollution. More needs to be done at the transnational and multilateral level in order to educate people on the issue, guarantee easy access to correct disposal practices and facilities all around the world, and strengthening the legislation on the topic. However, in order to do this, more funds need to be invested in such projects. Financial limitations have indeed been the real obstacle behind local and transnational improvements on tackling plastic pollution and developing new projects and initiatives on the issue.

Recently, more attention has been raised on the plastic pollution crisis. Not only by NGOs, scholars and experts, but also concerned citizens and the public, have started drawing more attention to the problem of ocean plastic pollution by voicing their concerns about the need for immediate action by governments and other institutional entities. Thus, it appears that progress is being made toward acknowledgment of the current crisis and for the need for a discourse oriented both toward the urgency to deal with the phenomenon and the necessity to find alternative and long-lasting solution.

[37] Ibid.

One year after the Clean Seas Campaign launched, 43 governments, representing half of the world's coastline, have signed up to the UNEP Campaign[38]. This shows increasing participation and interest in tackling the issue. Many of these governments have also made specific commitments to protect our oceans, banning or reducing single-use plastics and encouraging recycling through different legislation and new programs.

Another important driver of the recent attention on the issue has been the BBC documentary directed by David Attenborough, Blue Planet 2, broadcasted for the first time in the UK in December 2017. One of its episodes focuses on the dramatic status of our oceans, which are deeply affected by marine plastic pollution. The episode is credited for having raised an immediate and widely-felt wave of awareness and having shaken public opinion on the topic. This led many citizens to require governmental intervention and, consequently, led the country to take immediate action. In response to the sparked interest in ocean plastic pollution raised by the documentary, Theresa May, current British Prime Minister, just proposed a ban against cotton buds, plastic drinking straws, drink stirrers and other non-recyclable single-use plastics, which if approved, could be enforced as early as next year[39]. Moreover, the government of Commonwealth nations has also committed to creating a fund of £61.4 million to fight the rising tide of plastic pollution in the world's oceans, while Commonwealth leaders will soon be called to sign up to a strategy to help developing nations research and improve their waste management[40]. Meanwhile, as part of

[38] As of April 2018, the following countries had signed on to the Clean Seas Campaign: Bahrain; Barbados; Belgium; Brazil; Canada; Chile; Colombia; Costa Rica, Denmark; the Dominican Republic; Ecuador; Finland; France; Grenada; Iceland; Indonesia; Israel; Italy; Jordan; Kenya; Kiribati; Madagascar; the Maldives; Malta; Montenegro; the Netherlands; New Zealand; Norway; Oman; Panama; Peru; the Philippines; Poland; Saint Lucia; Seychelles; Sierra Leone; South Africa; Spain; Sri Lanka; Sudan; Sweden; United Kingdom; and Uruguay. (Wahlén, 2018)

[39] Perkins, Anne. "Cotton Buds and Plastic Straws Could Be Banned in England next Year." *The Guardian*, Guardian News and Media, 19 Apr. 2018, www.theguardian.com/environment/2018/apr/18/single-use-plastics-could-be-banned-in-england-next-year.

[40] De La Mare, Tess. "Governments Promises £61m to Tackle Scourge of Ocean Plastic Pollution with Commonwealth Nations." *The Independent*, Independent Digital News and Media, 15 Apr. 2018, www.independent.co.uk/environment/theresa-may-commonwealth-plastic-climate-change-ocean-pollution-david-attenborough-blue-planet-a8305721.html.

the country's comprehensive efforts, people in England will soon have to pay a deposit when they buy bottled and canned drinks in a bid to boost recycling and cut waste, as enforced by the new deposit return scheme proposal.[41] The UK and its strong commitment to fighting the rising tide of ocean plastic pollution have thus been in the spotlight, leading the way towards more integrated actions in fighting ocean plastic pollution both among different actors and around the world.[42]

In addition, many initiatives are being taken on a local, city level. This includes examples observed during my internship, such as the Long Beach Styrofoam ban and requirement for "plastic straws to be served only upon request" and the Malibu ban on plastic straws, stirrers and plastic cutlery that will take place in June[43]. Surfrider local chapters proved to be strong drivers and one of the main actors behind both victories. There are many more examples at the municipal level in the US, where I did the internship, and in many other nations as well. Indeed, a steep increase in similar initiatives has been registered in the last years, showing a particular receptivity to the topic.[44] Although these local achievements might appear minor or irrelevant compared to the total numbers of plastic consumption and pollution at the global level, they are still an important part of the rising wave of governmental interventions, as these interventions have stemmed from the many efforts conducted by local NGOs, environmentalists and activists. These local examples of partnership among city-level governments, activists, environmentalists and

[41] Harrabin, Roger. "Drinks Bottles and Can Deposit Return Scheme Proposed." *BBC News*, BBC, 28 Mar. 2018, www.bbc.com/news/science-environment-43563164.
[42] Nevertheless, there are also other countries that already passed or are currently evaluating specific regulations to limit single-use plastics consumption and potential pollution. Among them, Taiwan, Kenya, Zimbabwe, Costarica, France, Belize, Bahamas, Tremiti Islands in Italy, and more recently, the European Union as well.
[43] Tchekmedyian , Alene. "Malibu Bans Restaurants from Giving out Plastic Straws, Stirrers and Utensils." *Los Angeles Times*, Los Angeles Times, 26 Feb. 2018, www.latimes.com/local/lanow/la-me-ln-malibu-plastic-ban-20180226-story.html.

ENGOs are therefore, extremely relevant. First, they make the process of outreach immensely easier and faster leading to convincement and conversion of the concerned businesses and guiding their transition to more eco-friendly options (not leaving it up to a personal choice, but instead, setting a clear deadline by which businesses have to comply with the new legislation and complete the transition, setting clear standards to be implemented, explicit regulations which are the same for all the businesses in the area, etc.). Second, this type of initiative, usually undertaken by the city council members of environmentally-concerned cities, is normally followed by a lot of mass media coverage and "momentum." These initiatives fire up debates about the possibilities for more cities to join the cause and drive a "spontaneous outreach mechanism" that makes the topic more familiar to the public, normalizing it and showing the environmental-friendly potential benefits behind it, explaining why it is the right thing to do and creating an opportunity to expand the network of "green cities".

Unfortunately, the types of local bans that Surfrider, together with the help of other local environmental organizations, are working hard to achieve come with a flaw. Being dependent on the city-level and not having been approved statewide in California (with the exception of the plastic bag ban), they are sometimes followed by strong public dissent, generated by those lobbies that have a particular and personal interest in the topic and are affected by the new legislation, or simply by people that are contrary to being told what to do. This may consequently lead to strong opposition that could eventually result in its dismissal as soon as a new city council gets elected and new members who are less eco-friendly than the previous council get in power. This was the case for Huntington Beach and the bag-ban policy, before than it became a state-wide ordinance.

In Huntington Beach, indeed, the bag-ban was approved in April 2013, when the City Council, encouraged by four strongly environmentalist council-members, voted to ban

single-use plastic bags within city limits. With its vote, Huntington Beach became the 70th local government in California to take action against plastic bag pollution. However, two years later, a new city-council voted 6 to 1 to repeal the city's ban on plastic bags as well as the 10-cent paper bag fee, justifying the action with the fact that many residents had manifested opposition to the ban, seeing it as governmental overreach and a limitation on their freedom.[45] This was a first among cities that took initiative to adopt the ban in the past. Local environmental groups, including the Surfrider Foundation, Orange County CoastKeeper, and Californians Against Waste sued the city of Huntington Beach for the repeal and brought the case in Superior Court, accusing the city of failing to conduct appropriate environmental review on the significant effects of repealing the single-use plastic bag ban (including impacts on marine life, water quality, aesthetics of beaches, burden on taxpayers to remove one of the most common pieces of marine litter).[46]

Luckily, on the 8th of November 2016, Californians voted for passing Proposition 67, ratifying the 2014 state law, banning retailers from handing out single-use plastic bags at the checkout and consequently making void the repeal of the ban bag in Huntington Beach, which now is commanded under Californian State Law.[47]

This example easily demonstrates the reason why policies at a wider level are absolutely needed to "crystalize" environmental groups' efforts and achievements. Indeed, the following graphic shows the effectiveness of the ban in reducing the number of bags found during beach clean-ups, and therefore, polluting the ocean.

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[45] Carpio, Anthony Clark. "Plastic Bag Ban Repealed in Huntington Beach Effective June 3." *Los Angeles Times*, Los Angeles Times, 6 May 2015, www.latimes.com/local/lanow/la-me-ln-plastic-bag-ban-repealed-in-huntington-beach-20150506-story.html.

[46] Surfrider Foundation. "Environmental Groups Sue the City of Huntington Beach for Repealing Plastic Bag Ban." *Surfrider Foundation*, 2 June 2015, www.surfrider.org/press-center/entry/environmental-groups-sue-the-city-of-huntington-beach-for-repealing-plastic.

[47] The Times Editorial Board. "California Banned Plastic Bags. Now It's up to Consumers to Stop Being Wasteful." *Los Angeles Times*, Los Angeles Times, 23 Nov. 2016, www.latimes.com/opinion/editorials/la-ed-beyond-bag-ban-20161121-story.html.

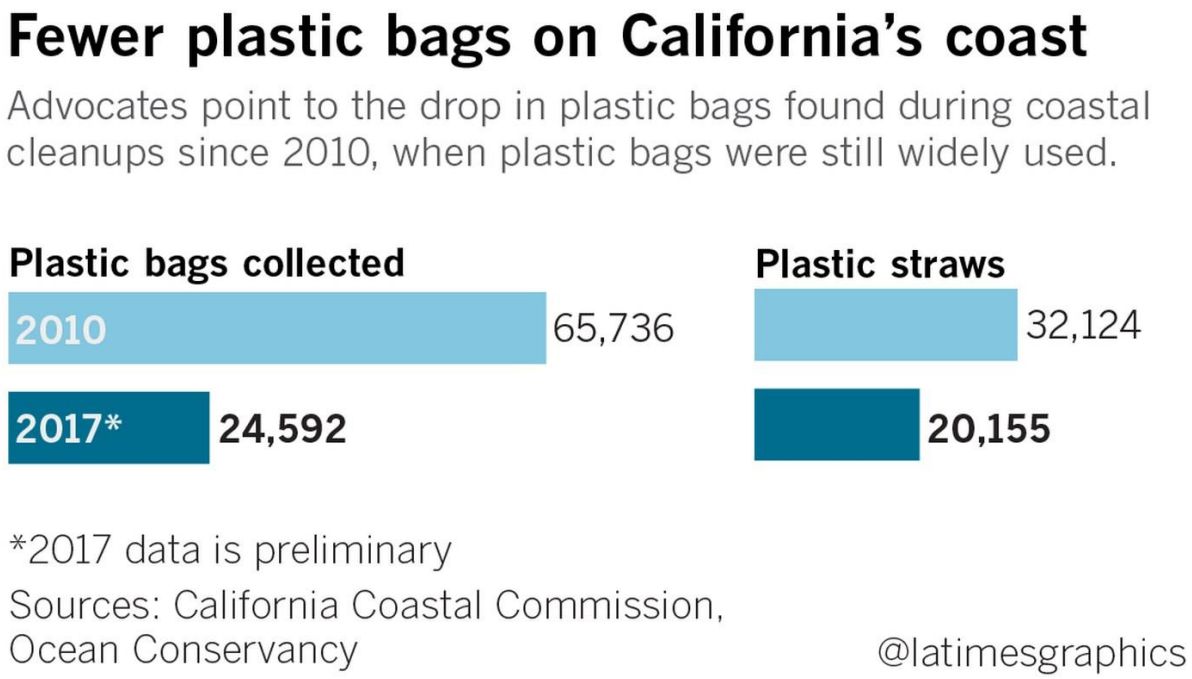

Fig. 5[48]

The slight reduction in the number of straws polluting our beaches and oceans that can be observed in the chart might derive from the recent campaigns and awareness-raising efforts that have targeted this item as the next subject of activists' ban campaigns. However, although some cities already approved "straws-upon requests" or "ban on plastic straws" measures, the number of straws found on the beach daily is still incredibly high and stricter legislation and/or a ban on their use at a wider level could definitely help in diminishing their presence as top polluters.

Moreover, state-level and federal policies would offer greater stability and protection for such policies, minimizing the risk of backtracking as a result of the political influence of local groups that have no personal interest in maintaining or introducing environmental conservation policies.

[48] Figure 5: Xia, Rosanna. "Straws. Bottle Caps. Polyester. These Are the New Targets of California's Environmental Movement." *Los Angeles Times*, Los Angeles Times, 28 May 2018, www.latimes.com/local/lanow/la-me-california-plastic-pollution-20180528-story.html.

I.F. Transnational legislation

To be fair, on the side of recent, growing efforts implemented by nation-states committed to reduce plastic pollution rates with new regulations, transnational laws aimed at limiting ocean plastic pollution already exist as well. Among them, the United Nations Convention on the law of the sea (UNCLOS), the London Convention, the MARPOL convention, the Basel Convention, Customary Law and many other regional agreements.[49] Unfortunately, very few states are in compliance with the obligations to which they have committed, and these agreements have proved mostly unsuccessful in reducing marine debris. Furthermore, these regulations are mostly focused upon limiting intentional dumping rather than preventing unintentional pollution. We will further analyze the legal framework built around the issue and the challenges which it is facing, together with the hypothetical reasons for its inefficiency in the following chapter. What it is important to consider is that we are not totally lacking a legal framework. The problem is that that framework is weak, inefficient and faces many difficulties in finding its way towards a stricter implementation and an auditing system with tools that ensure compliance by the states.[50]

I.G. Potential actions to push back against ocean plastic pollution

One of the purposes of this research was to identify the potential actions which can be taken by the three distinct categories of actors to address the ocean plastic pollution crisis. Observing the dynamics that come into play between these three groups during my internship enabled me to identify several actions, which will be summarized here and discussed in greater length later in the thesis.

[49] Harrabin, Roger. "Ocean Plastic Tide 'Violates the Law'." *BBC News*, BBC, 20 Feb. 2018, www.bbc.com/news/science-environment-43115486.
[50] Ibid.

First and foremost, to positively influence the plastic pollution crisis, civil society, working together with governments, should focus on improving environmental education, especially ocean conservation and marine plastic pollution. More awareness needs to be raised both among children (who represent the future generations) and adults (who have decisional power at the present time) on how much independent choices and individual behaviors directly affect the plastic pollution dilemma and how changes could potentially lead to massive improvements. It is urgent that people switch to greener behaviors, even if that means making extra personal efforts and implies higher personal expenses, when financially feasible, to cover greener products and services. Each one of us can take action in our daily life in order to reduce our plastic footprint. For example, we could reduce our own use of personal single-use plastics consumption, by carrying reusable items, shopping in places that do not make use of excessive packaging, raising awareness on the issue among friends and family, etc.

Another essential response to plastic pollution is a consistent drop in plastic consumption and, consequently, waste creation. An immediate reduction in unnecessary plastic usage and waste is what we really need, because the other alternatives, including technological progresses, the advent of bio-plastics, the myth of recycling, and a circular economy model, are not sufficient on their own. While they are all positive and helpful responses if juxtaposed to a reduction in consumption and waste generation, there are many reasons for them to be mistaken as "false-solutions" if presented as a viable alternative to an otherwise necessary and dramatic limitation in current plastic consumption, as will be discussed later.

Businesses and industries should also make their own contribution to solving the current crisis. They need to be more strictly regulated and to voluntarily take on board their global responsibility and moral obligation to join the common efforts. A stronger

involvement and commitment of the business sector is indeed vital and absolutely necessary, especially considering they are major polluters due to the volume of plastic waste they create and size of their footprint. Thus, it is necessary that businesses establish better recycling systems, decreasing their plastic consumption and waste volumes and promoting product re-design processes aimed at implementing reusable and highly-recyclable materials. Meanwhile, the pursuit of a "circular economy model" and of a new industrial ecology approach should be encouraged not only in the developed countries, but all around the world. Greener behaviors among customers should also be promoted, offering them more eco-friendlier and plastic-free choices. Thus, more supermarkets that implement a "plastic-free way of living" and sustainable shopping need to be developed, food needs to be sold with less or no packaging, and more programs for returning containers and other items that encourage recycling and reuse need to be implemented at the global level. Changing the consumers' efforts will not be enough, if better and easier-to-access green options are not made available for them. Industry and services should therefore take the lead in facilitating green-behaviors of the public.

Moreover, institutional and governmental interventions and incentives are needed to legitimize and "crystallize" other actors efforts in fighting ocean plastic pollution. Industries' and businesses' voluntary commitments to develop and follow a more sustainable model along with NGOs and non-profit efforts to address the crisis need to be backed up by national and transnational regulations and public policy. This would require everyone to conform to minimum green standards aimed at reducing plastic waste, thereby regenerating our oceans (including state-wide single-use plastic bans, deposit return scheme for drink containers, fees on single-use plastic items and so on). Meanwhile, governments should also incentivize and support those businesses that are willing to engage

in additional environmental-friendly measures, making sure that they do not incur excessive economic burdens.

Many environmental groups believe that once the big machinery starts moving, finding the support of environmentally-concerned businesses and industries and generating a discourse that sparks activism among the masses, it will be easier to achieve legislative victories. Indeed, if the general mind-set changes, leading people to ask for governmental and institutional intervention, governments will be more likely to eventually step in.

Thus, in response to the limitations and complications characterizing the wicked problem of plastic pollution, NGOs developed this new framework of action, where starting from a local level (through practical initiatives, direct activism, campaigns, education, raising awareness, and cooperation with local political entities and businesses or industries) they try to move to the global one. This happens through a network of environmental groups, intergovernmental institutions and global activists, that look to gain the support of transnational corporations, businesses and governments all around the world, are trying to change the common mindset and individual practices, creating a more environmentally receptive and concerned public.

Therefore, by touching on all these aspects and setting off this “chain-reaction”, the unsustainable model we are accustomed to can be modified and turned into a new model that would ensure better protection for other natural resources and decrease the gravity of the ocean plastic pollution current situation. Finally, governments that have the ability and resources to do so should also push for new and improved transnational and multilateral initiatives aimed at funding and helping the construction of better solid waste-management facilities in developing countries.

I.H. Research methods

With regard to the research methods used in this study, the main body of my independent research is represented by the case study centered on the Surfrider Foundation's efforts to fight plastic pollution, and more specifically on the chapter of Huntington Beach and Seal Beach, where I volunteered from September 2017 to December 2017. The Surfrider Foundation is a grassroots non-profit environmental organization, which acts on a strong community-based framework, both domestically and internationally with the goal of protecting our oceans and beaches. During the time I spent collaborating with the Surfrider Foundation in Orange County, my goal was to understand the organization's approach in tackling plastic pollution. I focused on identifying the main initiatives and programs enacted by the chapter and analyzing their effect on the plastic pollution debate. The purpose of this study was to identify the nature of the influence that the Surfrider Foundation can have on the plastic pollution crisis topic and if its actions can hypothetically lead to any reduction in the current rates of plastic consumption and waste generation.

I chose to do a case study on the Surfrider Foundation because I believe that ENGOs are characterized by a special feature that makes them vital in the debate on how to fight plastic pollution. The key-feature that characterizes them is their being part of a community, their openness and accessibility to the public and their ability to work with people, educating them and shaping their perceptions and actions in relation to certain issues, on which they are often highly specialized and about which they are truly passionate. Thus, NGOs often present themselves as irreplaceable actors. They are deeply involved in global issues and global policies but are also natural places of association to which people resort when they feel the need to raise their voice or learn more about a particular issue. Here, it is easier to connect and access to a network of experts, data, institutions and tools that

enable each individual to make a difference in the world, offering awareness, knowledge and solutions that each one of us can implement.

Surfrider was selected for the case study for several key reasons. First of all, it is an extremely interesting organization due to its development and history. From a small surfer community environmental group born in the 1980s in Malibu, it evolved into a very well-known and leading international non-profit organization, with active chapters in multiple locations and nations across the world. Second, the Foundation is engaged and concerned about a multitude of topics concerning our oceans well-being, including many programs aimed at tackling plastic pollution and raising awareness on the issue. Third, what makes the Surfrider Foundation so fascinating and special to me, is its intrinsic relationship with the communities it represents. People are not only the real target of the Foundation programs and initiatives, but also the real strength and driving motor of all the organization efforts and accomplishments, that would not exist without volunteers. Surfrider is a non-profit created by the community for the community, and its effectiveness and success are strictly tied to the enormous passion and drive that local volunteers donate to the non-profit, through leading and organizing the programs and activities in each chapter and doing most of the "ground-work". On the other hand, the Foundation's chapters also aim at "giving back" to the communities which they restore, addressing oceans-related problems relevant to the specific local area, campaigning for several causes, participating or organizing social events and contributing to different projects and initiatives in the area. Finally, the Surfrider family demonstrated to me that they are an extremely valuable research partner. Despite my short stay, they made sure that I could learn as much as possible about the organization and the chapter's work, sharing with me all of their information, helping with networking and inspiring me to focus my research on plastic pollution.

One of the most important takeaways of this experience, besides the knowledge I gained about the Foundation itself and its personal efforts on tackling ocean plastic pollution, is the related network of people I was lucky enough to gain access to. This internship gave me the chance to meet and have conversations with individuals coming from different sectors related to this research topic who had different roles in its possible solution (business men, governmental representatives, city council members, non-profit leaders etc.). This particular aspect and my conversations with these different kinds of people turned out to be fundamental for my research, as it enabled me to develop a better and more complete understanding of the wider picture in which the problem of ocean plastic pollution is located and the roles that different sectors and entities play in it.

The findings I achieved are the results of what I have been learning and experiencing through my internship and personal research processes. They are the outcome of a three-month observation process that took place while working for one of the Surfrider local chapters and interacting with people, participating in meetings, visiting and interacting with the Surfrider headquarters and participating to the Surfrider West Coast Chapter Leadership summit, that took place in San Francisco 29th September- 1st October 2017. All of this firsthand experience was then backed-up by an extensive literature review, based on books, academic articles and journals, aimed at synthesizing the story of ocean plastic pollution, underlining the aspects and shortages that have led to the gravity of the current situation and offering some viable solutions that different scholars have proposed in the recent years. Additionally, an integration of a meticulous study of websites and news articles relevant to the topic has also been fundamental in staying up to date and giving a real and complete portrayal of the current discourse on plastic pollution in its entirety. In fact, it is continuously evolving at a too rapid of a rate for academic sources to keep up with it. Thus, with the help of all these sources, I was able to build an extensive research on the history

of ocean plastic pollution, accompanied by a study of the general mechanisms of global environmental politics and the international legal framework that has been created to regulate the issue. The inefficiencies of these existing regulations and the problems that need to be solved to make the legislative system more effective have also been analyzed through these tools. Finally, other sources such as short-documentaries, brochures, campaign material, etc. to which I gained access through my internship, have also been utilized to conduct my research.

Obviously, during my work I also had to face some intellectual defeats and to re-shape some of my assumptions. For example, at the beginning of my research, I believed that the Foundation's ability to influence local, state-wide and federal legislation was way more effective and achievable in the short-term than it turned out to be after having spent three months observing and analyzing the mechanisms behind it. Moreover, I initially failed to acknowledge that besides the shortcomings in legislation, there are other important factors that play an equally important role in the current crisis and its solution, such as consumer behavior, public education and potential opposition that could result from the imposition of regulations without a prior sensitization of the population.

Therefore, despite Surfrider's tremendous efforts, passionate campaigns, protests and activism initiatives, it is really challenging to achieve any plastic-related legislative victory, even at the local or city-level. When it happens, is often a result of a coordinated action and long-time campaigns carried on with the help of other local NGOs.

At the same time, the more I researched the issue of ocean plastic pollution, the more I realized that the real-strength and goal of the Surfrider Foundation is its educational power. If Surfrider beach-clean ups efforts can only do a minimal part compared to the massive volumes of garbage that reach the oceans every day worldwide, and its legislative

victories take a long time to be achieved and often require a support network made by other NGOs and activists, the Foundation activities become more a symbolic and an awareness-raising tool. Thus, Surfrider aims at educating people and influencing their behaviors in order to have a direct impact on reducing the volume of plastic pollution entering our waters.

However, the educational aspect that characterizes the work of most ENGOs should not be underestimated. On the contrary, it is probably one of the most vital and immediate actions that governments, non-profit and NGOs, businesses and other political and international institutions should promote and heavily invest in. Only changing the common mind-set and raising awareness on the need to limit our plastic consumption, implementing new models and behaviors, and consequently new legislation and a whole new system, we can mark a turning-point from the current crisis, changing it for good and achieving over a longer-time frame the implementation of new sustainable standards for all.

I.I. Overview

In the first chapter I offer an introduction to the most common forms of marine pollution, followed by a focus on the legislative framework which includes a brief history of environmental global politics and the evolution of environmental legislation, together with the main regulations and regimes that are currently existing and should supposedly regulate and prohibit any type of ocean dumping, including plastics. The legislative framework is completed by a short analysis of its main actors and mechanisms. Unfortunately, these regulations only address intentional litter, while most of ocean plastic pollution is caused accidentally. Thus, there are gaps and shortcomings in legislation, which allow ocean pollution to keep growing. In the first chapter I will also focus on the phenomenon of plastic pollution more in detail, starting from a general explanation of what

it is, its origins, current rates and so on and addressing its negative impacts on marine life and ecosystems, providing also a more detailed analysis of the 5 “ocean gyres”. Finally, an overview of some of the most common solutions that have been offered over time to fight ocean plastic pollution will be presented.

Moving on to the second chapter, the spotlight turns to the Surfrider Foundation and its efforts in tackling the current plastic crisis. Their main activities and initiatives are analyzed through a double framework system. The first framework aims at looking at the most common types of plastic polluting items and at back-tracking to hypothetical best solutions to avoid those specific items from ending-up in the ocean. The second one analyzes and evaluates every program of the Foundation based on the “avoidance, minimization, mitigation” framework, identifying which one of the three goals each initiative strives for. While avoidance is the real ambition if we really aim at implementing long-lasting and effective solutions, minimization and mitigation efforts are equally important in shaping public awareness, building momentum and contributing to a discourse of healthier oceans for all.

Finally, in the conclusions I will focus on “what will happen next” analyzing the UK current efforts as the emblem of a potential watershed in the approach that states have towards tackling plastic pollution, which could revolutionize and inspire global change and stronger commitment around the world, or, contrarily, turn into the umpteenth defeat of the environmental activists against the plastic tycoons and their interests. “False solutions”, which cannot be sufficient on their own without decreasing total consumption and waste of plastics, such as bio-plastics, recycling and technological innovations meant at cleaning our oceans will also be analyzed, together with their restrictions. The limitations I incurred in during this study and potential prompts for future research are also discussed.

II. CHAPTER ONE: THE RISING TIDE OF OCEAN PLASTIC POLLUTION

Oceans are nowadays considered to be the last global common, and as a global shared resource, their management and related legislation is undeniably a complicated issue which often falls in a grey area when it comes to the assessment of the responsibilities and duties connected to their management and protection.[51] However, given their importance as a shared resource which is vital for many aspects of our ordinary life and absolutely indispensable for our survival, we should elaborate a system to protect them more efficiently. Thus, we could pose an end to the multiple types of degradation they have been subjected to, especially in the recent times.

II.A. Brief introduction to marine pollution

The marine environment is under siege both from land-based and marine-based sources of pollution. Land-based sources, however, account for the majority of the pollution and are believed to be responsible for nearly 80 per cent of total pollution of our oceans.[52]

There are distinct categories of wastes entering our seas and water-ways. Among these, the category that enters by far the greatest volume of waste in our coastal waters is represented by organic material. These degradable wastes are subjected to bacterial attack, and as such, are capable of enabling through an oxidative process a breakdown of the organic compounds into stable inorganic compounds such as H2O, CO2 and NH3 (ammonia).[53] These organic materials include a large part of urban sewage, agricultural wastes, food, brewing and distillery processing wastes, chemical industry wastes and oil spillages. However, if bacteria are normally an important enrichment to the ecosystem that do not constitute a danger to the marine environment, when their input-rate exceeds in

[51]Kong and Cooley, 2016, p.13
[52]Chasek, Pamela S., et al. *Global Environmental Politics*. 6th ed., Westview Press, 2013, p. 11
[53]Clark, R. B. *Marine Pollution.* 5th ed., Oxford University Press, 2001, pp.1-3

numbers and rhythm the degradation rate, the excessive number of bacteria can lead to an accumulation of organic materials. This results in an impoverishment of the flora and the fauna, and in destructive consequences for the marine ecosystem. The capacity of water to degrade bacteria is related to temperature, oxygen availability, water currents and so on, and differs from place to place.[54]

Other major land-based pollutants categories, which are responsible of current ocean degradation are: a) dissipating wastes, represented by industrial discharges that rapidly lose their damaging properties after they entered the water, thus confining their damaging effects to the area immediately adjacent to the point of discharge; b) conservative wastes, such as metals and halogenated hydrocarbons and radioactivity, which being not subjected to bacterial attack are essentially permanent additions to the ocean; c) solid wastes, including plastics (our main focus), dredging spoil, mine tailings, and so on.

In addition, fertilizers and particulates are also considered as supplementary categories of marine waste.[55]

Very rarely the nature or source of marine pollution inputs are simple or direct. Many times, in fact, pollutants travel a long way before reaching the oceans. Some of the most common sources are estuaries and water-ways, coastal industries, shipping and coastal towns. Nevertheless, many inputs to the sea are not deliberate, but derived from atmospheric fall-out, run-off from land, accidental spillages or sometime, even natural sources[56](e.g. particular rocks, volcanic activity or natural oil seeps).

Certain researchers and scholars believe that the oceans, rivers and lakes have an assimilative capacity, and that respecting certain limits and features, they are able to

[54]Clark, 2001, pp. 2-4
[55]Ibid.
[56]Ibid., pp. 5-9

regenerate themselves against pollutants. Therefore, in the past, it was common thinking to believe that a certain quantity of waste could have been allowed to be discarded within certain limits, without incurring in any severe environmental repercussion. However, over the years, the uncertainty in scientific knowledge on dumping consequences led the United States and other countries to take a preventive and precautionary approach on the subject, limiting and successively banning any type of intentional ocean dumping.[57]

Several are the efforts conducted at the international and transnational level to limit and prohibit intentional dumping of solid waste in the ocean and they will be analyzed in the next section. Unfortunately, oceans are a very hard area to keep under control and while states often fail to uphold their commitment to such regulations, transgressors are hard to be caught and punished. Meanwhile, stricter legislation oriented at punishing and limiting accidental dumping as well, is also missing. All these factors contribute to a weak ocean governance system, which leaks of the right tools to address the current marine plastic crisis.

II.B. Legislative Framework

As previously mentioned, my first tendency when coming across the problem, and preliminary studying it, was to think that a more evolved and structured legislation both at the domestic and international level would be sufficient to guarantee a solution to the ocean crisis. Soon enough, however, I realized that talking and dealing with ocean governance and ocean management legislation is not as easy as it may seem, and that there are many factors, interests and actors involved, which make it an extremely complicated subject. Thus, in order to strike the problem at its source and guarantee long-term interventions, solutions in the realm of policy and regulation aimed at fixing the shortcomings in

[57] Ringius, 2001, p. 65

legislation must be accompanied by some other measures as well. Such measures should include policies aiming at improving education and increasing businesses and consumer accountability, as well as favoring the acknowledgement that the current mind-set and status-quo cannot be preserved.

Governing environmental and spatial problems at sea, in fact, requires a multilayered governmental and multilevel governance institutional settings. In this context, as well as when dealing with plastic pollution, nation states are only one class of players, and their role and performances are dependent on the actions and strategies of other actors.[58] An overview of the main stakeholders and player in global environmental politics will be provided in the next section.

II.B.1 Different actors involved in global environmental politics issues

The main actors that are commonly involved in environmental global politics issues are: a) nation states; b) international organizations; c) environmental NGOs; d) corporations and industry groups; e) scientific bodies and experts.

Subnational actors are also starting to embody increasing relevance.

National governments, in fact, are no longer the only governmental actors in global environmental politics and have lately been required to share their field and power. Thus, non-state players are increasingly coming to exercise a significant role as well, influencing and taking the lead in global environmental politics.[59] Over the past years, different jurisdictions at distinct levels (states, provinces, cities, etc.) have shown increasing interest and support in adopting their own environmental policies, thus reinforcing and

[58]Tatenhove, Jan P.m. Van. "The Environmental State at Sea." *Environmental Politics*, vol. 25, no. 1, Dec. 2015, pp. 60–179., doi:10.1080/09644016.2015.1074386.
[59]Chasek, 2013, pp. 52-58

supplementing the efforts at the national and the international level, which in the past was mainly led by nation states.[60]

This is particularly true when observing the Surfrider Foundation's geography of action and their network structure, where cities, regions and local levels play a predominant role as playgrounds for the organization activism, as we will observe in the next chapter.

Among the non-state actors, the spotlight is currently falling on intergovernmental, regional and multilateral organizations and NGOs, which have all recently been increasing their role and influence in global environmental politics.

The UN, for example, offer a precious and valuable help in setting the global environmental agenda, due to their ability to initiate and mediate processes of regime formation and shape the environmental policies of donor agencies towards developing countries. They also provide independent and authoritative scientific information to states, other organizations, the public and the press, enabling the scientific community to play a significant role in treaty negotiation and in global environmental politics in general. The presence and influence of intergovernmental organizations in global environmental politics has greatly increased since 1972, the year of the United Nation Conference on the Human Environment, held in Stockholm, and since the founding of the UN Environmental Program aka UNEP.[61]

Regional and other multilateral organizations are also growing their sphere of influence in environmental politics. Some of them are specific functional groups that have taken on environmental responsibilities out of necessity (as for example the regional fisheries management organizations), while others have broad political and economic

[60]Ibid., p. 58
[61]Ibid., pp. 52-68

agendas that happen to include environmental issues as well or have been purposefully established in order to address specific environmental concerns. Among intergovernmental organizations, the European Union is the only regional one whose decisions have a binding character for its member states.[62]

Finally, a lot of attention has recently been dedicated to environmental NGOs[63], which strongly emerged as new actors and major players in global environmental politics. The idea behind my research is thus to demonstrate the inherent potential that a local grassroots organization as the Surfrider Foundation can have in changing minds, leading the way towards a new "public conscience", and thus, also towards new legislation.

According to Chasek, NGOs' influence on global environmental politics, depends mainly on three factors:

a) the fact that they often possess expert knowledge and innovative thinking about global environmental issues acquired through years of focused specialization or negotiation on them;

b) public acknowledgment of them as to be dedicated to goals that transcend narrow national and sectoral interests;

c) the fact that they often represent substantial consistencies within their own countries and thus can command attention from policy makers because of their potential ability to mobilize people to influence policies and tight elections.[64]

Moreover, NGOs can attempt to influence the development, expansion, and implementation of international regimes in various ways. Some examples are: raising

[62]Ibid., p. 81
[63] NGOs are here and for the rest of the thesis intended as independent no profit organizations or profit-making organization not beholden to a government. (Chasek, 2013, p.85)
[64] Ibid., pp. 85--91

public awareness about particular issues through educational campaigns; influencing global environmental politic agenda defining new issues or redefining old ones; lobbying governments to accept more advanced positions on particular issues, proposing drafts, campaigning, and participating in international negotiations. Also, generating media and press attention, supporting ratification and implementation of treaties and soft law by the government in their host country; bringing lawsuits to compel national action on specific issue; organizing consumers' boycott in order to pressure international corporations on particular issues and providing reporting and monitoring services.[65]

Private businesses and industries that deal with plastics are the last category of actors that need to be mention in relation to the ocean plastic pollution regime-building process. Normally members of this category are more likely to be opposed to any further step aimed at reducing plastic consumption and waste than members of the other categories. Nevertheless, private businesses and industries are important actors in global environmental politics. They not only influence bargaining over regime creation through advertising campaigns to influence public opinion, persuading governments to adopt a particular position on the regime being negotiated by lobbying it, or distributing targeted research supportive of their interest and position on the specific issue, but also by carrying out actions that directly affect the global environment. In fact, industries and businesses are considered major polluters. In addition, environmental regulations can directly affect the companies' economic interests, making them very influential actors when discussing new legislation. Thus, sometimes, they might oppose or weaken environmental regimes when they fear that the regimes will impose significant costs or reduce their profits.

[65]Ibid., pp. 85-91

Nevertheless, although often driven by opposite interests to the environmentalist agenda, when businesses and industries are on board with a particular cause or issue, they have also proven to be very strong supporters in creating and promoting national and international environmental policies.[66] An example that fits my research well is given by McDonalds, which has recently announced its goal to get 100 percent of its packaging from renewable, recycled or certified sources by 2025[67], phasing out plastic straws from its UK restaurants and acting as a "model" for many other chains and restaurants that could be inspired to follow the example given by the fast food giant[68]. Indeed, McDonald has proven successful in the past in leading the way toward more sustainable practices, inspiring other businesses to do the same.

For the purpose of this study, all the above mentioned actors have then been further subdivided into three groups, so to simplify the complicated framework in which they all act in relation to ocean plastic pollution, taking into consideration their personal and economic interests, their stance on the issue and their personal involvement in promoting or opposing any further action in reducing plastic consumption and pollution.

[66]Ibid., pp. 94-96

[67] Baertlein, Lisa. "McDonald's Sets Recycling Goals for Packaging, Restaurants." *Reuters*, Thomson Reuters, 16 Jan. 2018, www.reuters.com/article/us-mcdonalds-recycling/mcdonalds-sets-recycling-goals-for-packaging-restaurants-idUSKBN1F50VP.

[68] Horton, Helena. "McDonald's Says It Will Phase out Plastic Straws from All UK Restaurants." *The Telegraph*, Telegraph Media Group, 28 Mar. 2018, www.telegraph.co.uk/news/2018/03/28/mcdonalds-says-will-phase-plastic-straws-uk-restaurants/.

	The Main Categories of Actors of the Marin Plastic Pollution Crisis		
Actors	Civil Society	Industries and Businesses	States and Governmental Institutions
Actions	Education, Activism, Lobbying, Clean-ups	Waste Reduction, Circular Economy, Extended Producer Responsability, Greener Alterantives, Sponsorizing Conservation Projects	Stricter Regulations (Bans and Levies), Education, Increased Coordination with NGOs and Industries to Promote Sustainable Models of Consumption, Funding of Environmental initiatives
Current Impacts	Very active and responsive	Often oppositional, but when in support very effective	Inclined to compromise with industries and economic interests, controversial stance, low priority of environmental issues

Unfortunately, this multiplicity of actors, with different interests, powers and roles in global environmental politics, may sometimes lead to an overlapping in spheres of competence, thus favoring the existence of gaps in legislation and management and making it harder to enforce any rule or to check on the implementation of the current regulations.

Thus, despite the fact that several laws already exist in protection of our oceans, and that ocean plastic pollution and its worry-some numbers are in clear violation of the current international laws, existing legislation seem to have failed in preventing littering and pollution from happening and reaching our oceans.[69] It is necessary to identify why these laws are not working, what are the real problems at the source of the rising plastic pollution phenomenon, and which are the real factors and shortcomings that need to be taken into consideration in order to find a real solution to the current plastic crisis.

II.B.2 A brief history of environmental global politics and the evolution of environmental legislation.

Today environmental issues are addressed as globally important and a priority in most of nation-states' agendas, not only for their direct consequences, but also for the possible influences that they may have in other fields of world politics (such as international trade,

[69] Harrabin, 2018

economic development, humanitarian and social policy and international security). However, the situation was different till not a very long time ago.

The United States, for example, cradle of one of the first mass movements for environmental protection around the world, witnessed the rise of this wave of awareness only in the late 60s, as testified by some landmark pieces of legislation such as the National Environmental Policy Act of 1969, the Clean Air Act of 1970 and the establishment of the Environment Protection Agency (EPA) in 1970.

Until the 80s, in fact, global environmental problems were generally treated as minor issues by most of other governments. Finally, from the 80s on, the slow rise of environmental movements in other industrialized countries and the increased appearance of undeniable, well-publicized global environmental threats such as the depletion of the ozone layer, climate change and a decline in world fisheries, changed the situation world-wide. This gave environmental issues a much higher status in global politics.[70]

Other forces that also played a key role in this change, were the explosive growth in economic activity and world population that followed world war II, linked to an increase in resources consumption and consequently, in waste production.[71] These changes were followed by an increased scientific understanding of the human impact on the environment and by new awareness of the fact that many by-products of human development and economic growth have put cumulative stress on the physical environment, not allowing ecosystems to regenerate in time and depleting resources.

As a consequence, during the mid-80s, the concept of sustainable development started to gain traction, promoting "a development that meets the needs of the present

[70] Chasek, 2013
[71] Ibid., pp.1-2

without compromising the ability of the future generations to meet their own needs", finding credibility and a legitimization through the Agenda 21, outcome document of the Earth Summit in 1992.[72] Nowadays, this search for a "sustainable model of development" that doesn't affect or deplete the environment and particularly, the oceans, is still an unfulfilled promise, which needs to be urgently prioritized. This is particularly true when focusing on plastic consumption and the related pollution it causes. The need to develop a new material which is equally cheap and versatile or new ways of living that prescind overconsumption of plastic are a real priority, but unfortunately, we are still far from this goal.

The global character of environmental problems, which transcend national boundaries, as in the plastic pollution case, turn them into an evident demonstration of the fact that individual actions of single countries is not sufficient to deal with them. Instead, an international cooperation aimed at reversing and halting environmental degradation and a network of different actors working together is required when facing this type of issues.

II.B.3 Transnational Laws

On this purpose, several international agreements were created to control marine plastic litter, and according to international law they should already prohibit and/or control marine plastic pollution:

a) the United Nations Convention on the Law of the Sea (UNCLOS), arguably the largest and most complex treaty ever negotiated.[73] It was established in 1982 but entered into force in 1994. It provides a comprehensive regime of law and order in the world's

[72]Ibid., p. 35

[73] Council on Foreign Relations. "The Global Oceans Regime." *Council on Foreign Relations*, Council on Foreign Relations, 19 June 2013, www.cfr.org/report/global-oceans-regime.

oceans and seas, establishing rules governing all uses of the oceans and their resources.[74] Article 194 of UNCLOS requires states to prevent, reduce and control pollution of the marine environment from any source.

Nevertheless, one of the main problems related to the Law of the Sea is that, according to its ratification, large tracts of the coastal waters, stretching out to 200 nautical miles and more, have been accorded to coastal states jurisdictions as exclusive economic zones (EEZ). Thus, much of the ocean waters, more specifically the 60% circa[75], remain an international common, which recognize no man-made boundaries and are not subjected to the control of any individual nation[76], creating serious issues of governance and responsibility attribution in these areas. These waters, known as high-sea, are regulated via numerous UN-led sector specific agreements, which however drawn some criticism due to their narrow-nature, leading to think that global ocean governance is too fragmented, and putting high-seas at ecological risk for decline.[77]

b) the London Convention, also known as "The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972". It requires that contracting parties issue a permit for the dumping of wastes and other matters at sea, and more generally, prohibits the dumping of specific hazardous materials.[78] The London Convention was also the first marine pollution agreement to accept the right of the coastal states to enforce prohibitions against pollution and become an important forum for

[74] Oceans & Law of the Sea, United Nations. "United Nations Convention on the Law of the Sea of 10 December 1982, Overview and Full Text." *United Nations*, www.un.org/depts/los/convention_agreements/convention_overview_convention.htm.
[75]Holland, 2010, p. 15
[76]Ibid., p.1; Silver, Jennifer J. et al. "Blue Economy and Competing Discourses in International Oceans Governance." *Journal of Environment & Development*, Vol. 24(2), 2015: 135–160, doi: 10.1177/1070496515580797
[77] Silver, 2015
[78] EPA. "Ocean Dumping: International Treaties." *EPA*, Environmental Protection Agency, 12 Mar. 2018, www.epa.gov/ocean-dumping/ocean-dumping-international-treaties.

negotiating further control on ocean dumping.[79] Over time, indeed, Contracting Parties to the London Convention have revised the treaty by banning ocean dumping of certain wastes and by promoting pollution prevention and sound waste management.[80]

c) the MARPOL Convention, which represents an important example of how regimes[81] are often capable of evolving over time, strengthening their rules and/or slightly evolving in their scope. Indeed, the MARPOL convention originally began as "The International Convention for the Prevention of Pollution of the Sea by Oil", in 1954, but due to its ineffectiveness turned into "The International Convention for the Prevention of Pollution from Ships" in 1973, coming into force only in 1983, after that a Protocol modified it in 1978[82]. This revised convention now covers different regulations and limits other types of discharges at sea as well, including solid waste and plastics.[83]

d) the Basel Convention, which represents the world's most comprehensive environmental agreement on hazardous and other wastes, with over 160 parties and the goal to protect human health and the environment from the inappropriate management of hazardous and other wastes. The Convention regulates the movement of hazardous waste, including some plastics[84], and obliges its members to ensure that such wastes are managed

[79] Chasek, 2013, p. 24
[80] EPA, "Ocean Dumping: International Treaties.", 2018.
[81] "International regime" is intended as a system of principles, norms, rules, operating procedures and institutions that actors create to regulate and coordinate action on a particular issue area of international relations, such as that of ocean dumping. An international regime usually centers on one or more formal international agreements. Often, the agreement on which the regime is built, is a binding one (or a legal instrument), which most commonly takes the form of the convention. Contrarily, when a regime is developed around a non-binding agreement, is usually recognized and named as soft-law. Soft-law measures are often used as an effective way to avoid the lengthy process of negotiating, signing and ratifying binding agreements. However, sometimes they can turn into a double-edge sword, defeating the real purpose of creating new regulations to further protect the environment. Parties that are unwilling to commit to a binding agreement, frequently use soft-law as viable alternatives to save their face in front of political pressures on particular issues. (Chasek, 2013, p. 68)
[82] Rochman, Chelsea M., et al. "Policy: Classify plastic waste as hazardous." *Nature* 494.7436, 2013: 169-170
[83] Chasek, 2013, pp.19-24 and p. 66
[84] Basel Convention. "Overview." *Basel Convention Website*, www.basel.int/Implementation/MarinePlasticLitterandMicroplastics/Overview/tabid/6068/Default.aspx.

and disposed of in an environmentally sound manner. Moreover, in 2005, The Secretariat of the Basel Convention and the Regional Seas Programme of the United Nations Environment Programme (UNEP) have decided to join their forces in the fight against coastal pollution with the signing of a Memorandum of Understanding in Nairobi. Their main area of cooperation is the environmentally sound management of hazardous wastes, in order to prevent coastal and marine pollution.[85]

e) Customary Law and many other regional agreements, which address the particular needs of specific areas, play also an important role in regulating different types of ocean dumping around the world.

Today, the ocean international space is regulated by 589 bilateral and multilateral agreements. This well-reflects, together with the absence of more effective and overarching transnational binding regulations, the fragmentation that characterizes ocean governance and the low priority that world political leaders accord to its improvement. It also reflects the general complacency of users of this special international space with the continuance of the status quo, regardless of its ineffectiveness as a regulatory framework.

II.B.4 Multilateral efforts

On the side of the above-mentioned transnational agreements, global action on plastic pollution and other threats to our oceans has also been taken through other type of initiatives, fostered particularly by the agencies of the UN and the Global Environment Facility.[86] Some examples are the following:

[85] UNEP/273. "Basel Convention on Hazardous Wastes, UN Regional Seas Programme to fight against coastal pollution together." *United Nations*, United Nations, 1 Mar. 2015, www.un.org/press/en/2005/unep273.doc.htm., https://www.un.org/press/en/2005/unep273.doc.htm
[86] Basel Convention. "Overview." *Basel Convention Website.*

- The UNEP Global Programme of Action (UNEP/GPA) which aims to prevent the degradation of the marine environment from land-based activities by "facilitating the realization of the duty of States to preserve and protect the marine environment."[87] Its uniqueness lies in the fact that it is the only global initiative that directly addresses the connectivity between terrestrial, freshwater, coastal and marine ecosystems. It aims to be a "source of conceptual and practical guidance to be drawn upon by national and/or regional authorities for devising and implementing sustained action to prevent, reduce, control and/or eliminate marine degradation from land-based activities."[88]
- The Global Partnership on Marine Litter (GPML), which has operated as a key actor since its launch in June 2012 at Rio+20 in Brazil, leading to a cooperation among international agencies, governments, academia, the private sector, civil society and individuals.[89] Its main goal, besides being supportive of the Global Partnership on Waste Management, is to protect human health and the global environment by the reduction and management of marine litter, through several specific objectives.[90]
- The Honolulu strategy, which offers a framework for a comprehensive and global cooperative effort to reduce the ecological, human health and economic impacts of marine debris worldwide.[91]
- The 2/11 resolution on marine plastic litter and microplastics, adopted by the UN Environment Assembly at its second session, in order to stress prevention and

[87] UN Environment. "UNEP Global Programme of Action (UNEP/GPA)." *UNEP Global Programme of Action (UNEP/GPA)*, web.unep.org/nairobiconvention/unep-global-programme-action-unepgpa.
[88] Ibid..
[89] Basel Convention. "Overview." *Basel Convention Website*.
[90] UNEP. "Global Partnership on Marine Litter." *UN Environment*, www.unenvironment.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-partnership-marine.
[91] Basel Convention. "Overview." *Basel Convention Website*.

minimization of those waste along with environmentally sound waste management systems and clean-up efforts.[92]

- Many projects funded by the Global Environment Facility promoting action on the focal area of international waters. Some of the most relevant ones are those focusing on fisheries, nutrient removal and management, land-based sources of pollution, integrated water resource management, integrated coastal zone management, etc.[93]They also funded a more specific project on plastic pollution, pledging to invest $2 million dollars to assist the efforts of the Ocean Conservancy's Trash Free Seas Alliance, while also supporting the Ellen MacArthur Foundation's "New Plastics Economy initiative", aimed at moving the entire plastics supply chain toward a circular economy.[94]

Therefore, different transnational conventions and multilateral efforts, together with regional marine protection agreements and customary law have been created in the last decades aiming at an increased protection of our oceans. Nevertheless, all these tools seem to have failed to prevent a growing increase in the tide of plastic pollution from happening.[95]

One reason for the "failure" of the current legislation might be attributed to the fact that most of the mentioned agreements are meant to regulate intentional, as opposed to accidental disposal of waste into our oceans, thus leaving a consistent gap in legislation, which allows for dangerous practices for our oceans. Thus, there is a need to fill the substantial shortages in current legislation, creating more extensive and binding agreements

[92] Ibid.
[93] Independent Evaluation Office. "International Waters Focal Area Study.*" Independent Evaluation Office Global Environment Facility website*, May 2017, http://www.gefieo.org/sites/default/files/ieo/signposts/files/international-waters-study-2016-brief.pdf
[94] Global Environment Facility, "The Ocean Is Everyone's Business." 24 Feb. 2017.
[95] Ringius, 2001, p. 33

that require states not only to control and avoid intentional dumping, but also to promote new legislation that aims at preventing accidental pollution from occurring.

Moreover, a shortage of global funding for plans and initiatives concerning ocean conservation might also have played a determinant role, affecting the existing projects and preventing them from reaching their full potential. In order to install a plan of action capable of tackling marine plastic pollution, more funds need to be invested towards helping developing countries to establish new waste-management facilities, education and raising awareness of the problem.

II.B.5 The role of public ideas and civil society

According to Ringius, another fundamental element that must be taken into account when talking about environmental global politics and the resolution of severe environmental crisis is the role of public ideas, that should be prioritize more often. Indeed, they can significantly influence the process of regime formation and regime change. Public ideas, defined as widely accepted ideas about the nature of a societal problem and about the best way to resolve it in order to foment the welfare of the society[96], are different from private concerns, since they belong to the society and not to the single individuals. By defining how societal problems are perceived, public ideas can shape policies and the public debate about them. Moreover, under specific circumstances, the interplay between public ideas and transnational coalitions of policy entrepreneurs can create new environmental regimes or change the existing ones.[97]

An additional example of this, besides the MARPOL convention that I mentioned earlier, is represented by the London Convention, which underwent an interesting regime

[96] Ringius, 2001. p. 1
[97] Ibid.

change process as well. Starting off as an anti-dumping regime which only limited high level rad-waste and other specific substances, while requiring permits for others, it underwent an important two steps transformation.

The first step, took place in the late 60s and early 70s, when the idea that oceans were dying gained tremendous public and political influence, gaining traction among important policy makers, especially in the United States. These policy-makers responded to this public idea establishing a domestic ocean dumping regulation and playing a key leadership role in framing the related international regime. The second step, which naturally followed the first one, involved a broad range of non-state actors including scientists, ecologists, specialized organizations of the UN, ENGOs and international mass media, which placed the issue of ocean dumping on the global agenda, mobilizing international, political and public support. [98]

Thus, through this two-steps process, the public request for new attention towards our oceans' health was first institutionalized in an international regime on ocean dumping which also limited low-level radioactive waste, and finally, into a new global regime which ratified a universal ban on rad-waste disposal in 1993.[99]

This example is a demonstration of how ideas and interests can influence policy within international settings through persuasion and communication, thus leading to the formation of an international public opinion, that went from a permissive allowance of rad-waste disposal to an emphasis on precaution and prevention.[100]

[98] Ibid., p.10-11
[99] Ibid., Chapter 1
[100] Ibid.

The goal of NGOS and activists, is that of enabling the same process of regime formation evolving from public ideas, to develop in relation to the ocean plastic pollution subject, creating stricter regulations that not only address intentional litter, but also accidental pollution.

A common awareness and a request for action on the need to limit our consumption, waste production and the rates of litter and mismanaged waste washing up in the oceans needs to be raised among the public, calling for more effective governmental interventions. This is where the action of NGOs such as Surfrider becomes extremely relevant.

In fact, should the preliminary education and awareness on the issue be missing among people when stricter regulations are created by the government as a form of intervention against plastic pollution, new legislation might face fierce opposition. This opposition can derive from the society, that doesn't want to be told what to do, and from those business owners that feel personally and/or economically threatened by the new legislation and can turn into a problematic factor. Opponents perceive such regulations as an imposition on their activity and free-will, as observed in the Huntington Beach's ban the bag case. Thus, public resistance might jeopardize any further step and improvement in solving the issue, leading to a dismissal of progressive environmental laws and to a defeat of environmentalists' past efforts and achievements.

Is with this framework in mind that activists and NGOs such as the Surfrider Foundation believe that education of the public, knowledge-sharing and awareness-raising projects and events are the biggest priority at the current time. Their goal is not only to teach the public how to be ready to welcome new legislation, but also to encourage people to take initiative, demanding that their governments take stricter and bolder action and legislation in order to keep our oceans alive.

II.C. The phenomenon of Plastic Pollution

Today, the seas in all parts of the world are littered with man-made debris, most of it represented by plastics, which are practically indestructible and permanent in the marine environment once they become part of it. An estimated eight million tons of plastic end up in our oceans every single year, either as intentional dumping, accidental dumping, from land-sources, marine-sources or as run-off from rivers and creeks.[101]

Mass production of plastic began in the 1950s and some of the earliest accounts of plastic debris in the marine environment were recovered as early as in 1960s as fragments and pellets ingested by seabirds. From then on, over the next decades, there has been a rapid and substantial increase in anthropogenic debris on the ocean surface, bottom and beaches worldwide.[102]

Large quantity of plastic and other debris can be currently found in the most remote places of the globe, since they can easily travel very long distances, persisting in the environment almost indefinitely, thanks to their tendency of breaking down in very tiny particles, without ever disappearing.

Currently, there are five major oceanic gyres in the world's oceans: the North Pacific Gyre, also known as the "Great Pacific Garbage Patch", probably the most-well known one, the South Pacific Gyre, the North Atlantic Gyre, the South Atlantic Gyre and the Indian Ocean Gyre. These gyres all operate similarly: they occur at mid-latitudes and

[101] Mwangi, 2017

[102] Barnes, D. K. A., et al. "Accumulation and Fragmentation of Plastic Debris in Global Environments." *Philosophical Transactions of the Royal Society B: Biological Sciences*, vol. 364, no. 1526, 2009: 1985–1998., doi:10.1098/rstb.2008.0205.

experience slack winds and slow, spiraling currents that lead to similar patterns of plastic fragments accumulation.[103]

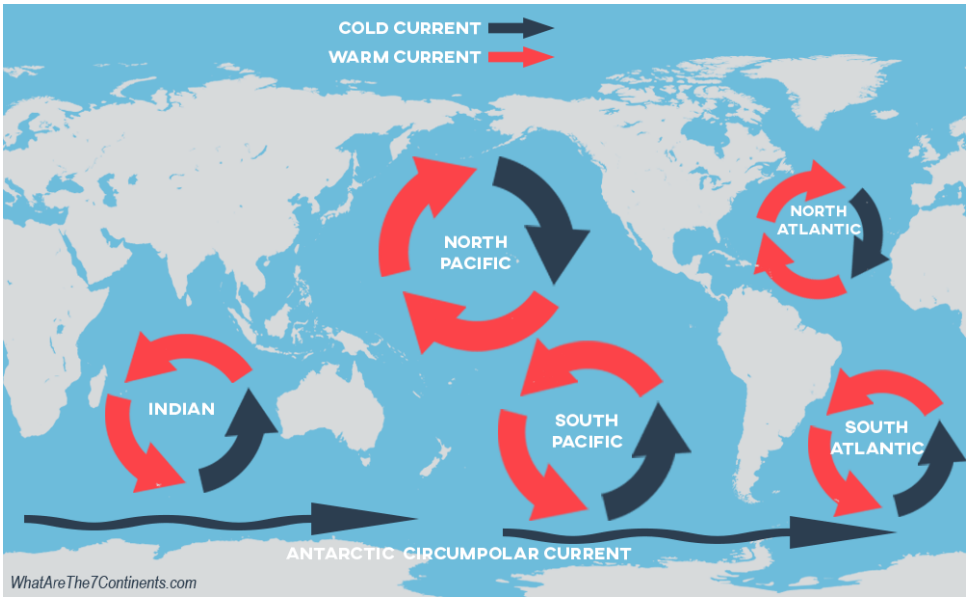

Fig. 6[104]

Therefore, despite plastic fragments can freely flown all around the world in the ocean, they tend to accumulate in specific places. Not only in the five gyres and on the surface of the oceans, but also on beaches and in the seafloor, where they sink due to fouling and breakdown. Thus, in the seafloor, plastic accounts as the most prevalent form of debris. More than the 70% of the ocean floating plastic will eventually sink to the bottom and more than 94% of ocean plastic has been estimated to be found on the sea-floor[105]. In addition, it has been recorded that a decreasing trend in debris concentration is observable while travelling from the equators from either pole, likely linked to a combination of the greater ocean area in the tropics, higher population concentration in lower latitudes and the

[103] Gubler, Anthony. "Eliminate the Patch: What the US can do to solve the marine debris issue." 2011, p. 15
[104] Figure 6: 7Continents. "Ocean Gyres." *The 7 Continents of the World*, www.whatarethe7continents.com/ocean-gyres-formation-maps-more/ocean-gyres/.
[105] Sherrington, 2016

prevailing ocean and wind patterns, showing that a multitude of factors affect the patterns followed by marine debris.[106]

There are many sources of plastic accumulating in the environment either from direct dropping and dumping of litter on land or at sea, or blowing from landfill sites, losses in transport and accidental or involuntarily dispersion of it in the surrounding eco-systems. Typically, from 40% up to 80% of mega and macro marine debris items are plastic, much of it packaging, carrier bags, footwear, cigarette butts, lighters and other domestic items. Fishing-related sources of debris are also common, especially in the more remote islands.[107]

Discarded netting and drift nets, trap and kill very large numbers of fish, diving seabirds, and sea mammals.[108] In addition, mammals, reptiles and birds can also be harmed through eating plastic or becoming entangled in it. Fishing and plastic debris can thus kill or injure many animals and organisms, including ecologically and commercially important species, comprising mussels, salt-marsh grasses and corals. Moreover, larger pieces of plastic debris in the ocean have been proven responsible of the transport of foreign species to new habitat, where they threat to damage the original, autochthone ones. [109]

Finally, another pressing issue concerning marine plastic pollution is represented by microplastic and microbeads.

Thousands of tonnes of plastic microbeads are contained in cosmetics and personal care products, such as tooth-pastes, exfoliating face scrubs, exfoliating shower-gels and so on, while microscopic textile fibers, released from our synthetic garments during a washing machine cycle are too tiny to be captured by regular washing-machines filters. Thus, all

[106] Gubler, 2011, pp. 18-19
[107] Barnes, 2009
[108] Clark, 2001, p. 185
[109] Rochman, 2013, p. 169

these tiny plastic particles and fibers are transported to sewer systems, which are not able to remove these particles due to their minimal size and consequently enter the marine environment. Other common sources of microplastics are paints and tires.[110] All these different types of microplastics that wash yearly into our oceans and seas have been proved harmful for wildlife and can ultimately be eaten by people, through seafood, clams, mussels, etc.[111]

While garments industries and washing-machines producers are working together trying to elaborate better fibers or more advanced filters able to catch these tiny particles, the solution to avoid microbeads in cosmetic products might be even easier. A number of countries, including the UK, Italy and New Zealand, have already approved a proposal to start banning them from production and sale. The UK and New Zealand already started to implement the ban this year, while Italy will follow in 2020.[112] Given the urgency of the plastic pollution issue, even tiny steps like this are absolutely needed and the hope is that more countries will follow in banning these types of products that are unnecessary in our lives and harmful both for the environment and our food-chain.

A recent study by Roland Geyer, industrial ecology professor at the University of Santa Barbara, California, has brought light on some terrifying numbers that well depict the dramatic crisis of overconsumption that plastics are facing.

[110] EFSA Panel on Contaminants in the Food Chain. "Presence of microplastics and nanoplastics in food, with particular focus on seafood." *EFSA Journal* 14.6, 2016, https://efsa.onlinelibrary.wiley.com/doi/full/10.2903/j.efsa.2016.4501

[111] Gabbatiss, Josh. "Microplastics Are Exposing Whales and Sharks to Toxic Chemicals." *The Independent*, Independent Digital News and Media, 5 Feb. 2018, www.independent.co.uk/environment/microplastics-ocean-pollution-whales-sharks-threat-plastic-coffee-cups-microbeads-a8194131.html.

[112] Abbing, Michiel Roscam. "Ban on Microbeads in UK, Italy and New Zealand." *Beat the Microbead*, 22 Dec. 2017, www.beatthemicrobead.org/ban-on-microbeads-in-uk-italy-and-new-zealand/.

The study shows that global production of plastic resins and fibers raised dramatically from 2 Million tonnes in 1950 to 380 Million tonnes in 2015, with a compound annual growth rate of 8,4%.[113] The total amount of plastics manufactured from 1950 through 2015 amounts at 7800 Million tonnes[114] and keeps increasing year by year.

Of all the plastic that has ever been produced only the 9% has been recycled over the years and the 12% has been incinerated[115]. The rest of it, created from the 50s on, it is all still out there, either buried in landfills, or travelling the globe polluting our land and oceans.

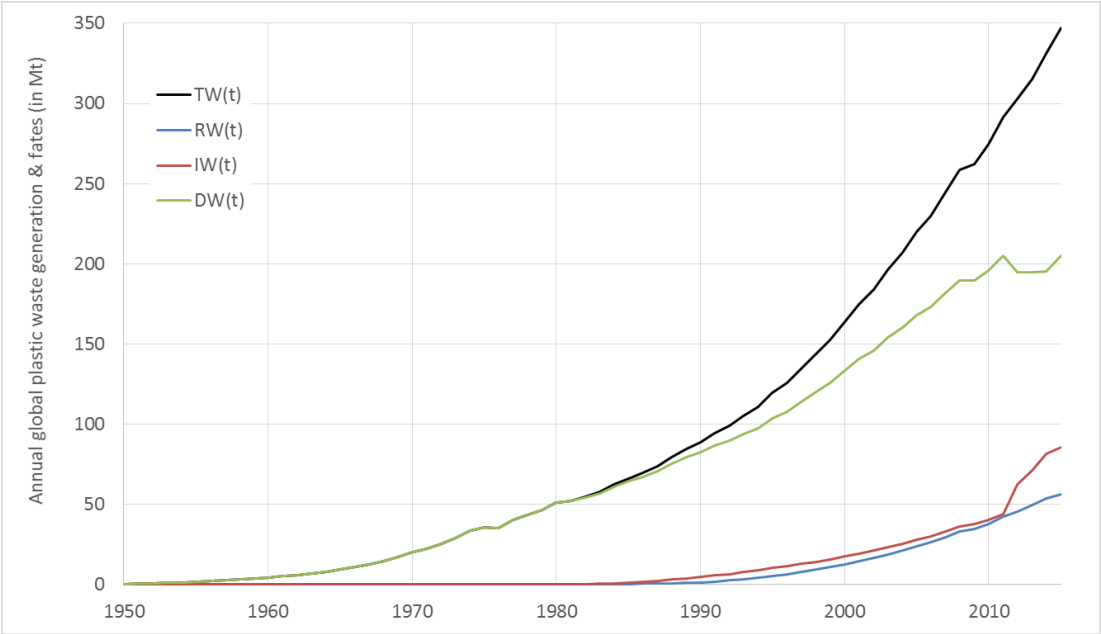

Fig. 7: Annual global primary and secondary plastic waste generation TW (t), recycling RW (t), incineration IW (t), and discard DW (t) (in million metric tons) from 1950 to 2014.[116]

Moreover, in addition to physically harm wildlife and endanger the world's ecosystems, plastic debris can also be responsible for chemically harmful processes, either

[113] Geyer, 2017
[114] Ibid.
[115] Ibid.
[116] Figure 7: Geyer, Roland et al. "Supplementary Materials for Production, use, and fate of all plastics ever made" *Sci. Adv.* 3, e1700782, Jul 2017, doi: 10.1126/sciadv.1700782

because they are themselves potentially toxic or because of their likeliness to absorb other pollutants.[117]

Furthermore, as plastic breaks down into smaller units, it is more likely to infiltrate in food and to be ingested by fish and consequently make its way up in the chain food, eventually getting ingested by humans too. Studies in humans and shellfishes have found that ingested and inhaled microplastics get into cells and tissues where they can cause harm. However, research and study on the phenomenon are too recent to have reached any conclusive finding on the real impact and consequences that plastic ingestion has on human subjects.[118]

According to a hazard-ranking model based on the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals, the chemical ingredients of more than 50% of plastics are hazardous, with some specific chemicals that can even accumulate in the blood or be carcinogenic. The monomers making up other types of plastics, such as polyethylene (used to make carrier bags), are thought to be more benign. Yet, these materials can still become toxic by picking up other pollutants, such as pesticides and organic pollutants. Many of these are 'priority pollutants': chemicals that are regulated by government agencies, including the US Environmental Protection Agency (EPA), because of their toxicity or persistence in organisms and food webs.[119]

Studies show that at least 78% of priority pollutants listed by the EPA and 61% listed by the European Union are associated with plastic debris. Some are ingredients of plastic,

[117] Rochman, 2013, p. 186
[118] Christensen, Ken. "How Much Plastic Do You Want In Your Oysters And Clams?" *Earthfix*, 14 Sept. 2017, www.earthfix.info/news/article/oysters-with-a-side-of-microplastic/.
[119] Rochman, 2013, p. 170

and others are absorbed from the environment. [120] Thus, the question arises: why haven't stronger regulations about plastic come into place?

The only real way to diminish plastic pollution is to start consuming and producing less plastic, optimizing plastic waste management and waste reduction procedures and incentivizing industrial and consumers behaviors that support more sustainable models.

When reduction is not possible, following the precepts of the "3 Rs' waste hierarchy model", aka Reduce, Reuse, Recycle[121] the other two alternatives, reuse and recycle, can be good options as well. Indeed, we should at least engage in initiatives tailored at saving new virgin plastics from being produced. Reusing and repurposing old items, instead of buying new ones, or engaging in stricter recycling procedures, can both be good solutions in order to achieve a decrease in the amount of new plastic materials entering our environment. However, these cannot be considered sufficient solutions on their own and when talking about recycling, we should be careful in building the right discourse around it, underlining when and under which conditions it can truly be effective, thus avoiding the dangers of portraying it as a false solution, as we will analyze further on.

II.D. Common responses

Although the first and most important solution of all remains a necessary reduction in plastic consumption and waste, diverse responses to the plastic pollution crisis and plans of action for multiple actors have been proposed over the recent years. Multiple scholars have suggested different approaches in order to take a more severe and effective role on

[120] Ibid.
[121] EPA."Reduce, Reuse, Recycle." *EPA*, Environmental Protection Agency, 2 Jan. 2018, www.epa.gov/recycle; Conserve Energy Future. "The Three R's: 'Reduce, Reuse, Recycle' Waste Hierarchy." *Conserve Energy Future*, 23 Dec. 2017, www.conserve-energy-future.com/reduce-reuse-recycle.php.

limiting ocean plastic pollution. I will give a brief overview of the most interesting suggestions.

II.D.1 Classifying plastics as a hazardous material

The first solution that I found very fascinating, but also capable of creating several controversies if seriously taken into consideration, is a proposal for a radical shift in the categorization of plastic, from solid waste to hazardous material. Given all the previously mentioned reasons, and in particular, the chemical and physical associated dangers of plastic materials, there are sufficient reasons to motivate this request for change.[122]

Besides the various conventions and international agreements that regulate intentional ocean dumping and that have been analyzed earlier, to my knowledge, no clear attempt of binding nature has been made to regulate and improve the disposal of plastics on land at an international level. Such legislation could prove immensely effective in encouraging a more attentive management and disposal of plastics all over the world, especially if supported by funding and aid programs directed towards developing countries. This would limit the amount of plastic washing into our oceans every year and help reduce the effects of accidental dumping.

Doing so, would allow environmental agencies to have wider power to restore affected habitats and prevent more dangerous debris from accumulating, given the stricter regulations associated with hazardous material. Ultimately, such a move could boost research on new polymers and replace the most problematic materials with safer ones[123], translating into an effective measure, with a long-time course of action.

[122] Rochman, 2013
[123] Ibid.

Currently, four plastics (PVC, polystyrene, polyurethane and polycarbonate) make up roughly 30% of production. These materials are all particularly difficult to recycle and are made of potentially toxic constituents.[124] Some progressive industries are already replacing these materials with safer, more durable and recyclable ones, but it is evident that more needs to be done. With a change in plastics categorization, not only could we expect an important reduction in plastic pollution, but numerous affected habitats would also qualify to be cleaned up under national legislation, using government funds[125].

If current consumption rates continue, the planet will hold another 33 billion tons of plastic by 2050, with plastic coming to outnumber fishes in the ocean.[126] However, this could be reduced to just 4 billion tons if the most problematic plastics are classified as hazardous immediately and replaced with safer, reusable materials in the next decade.[127]

II.D.2 Industrial ecology, circular economy and the role of businesses and industries

Another very popular solution when talking about waste reduction and plastic pollution nowadays, is focusing on the role of industrial ecology. The industrial ecology approach aims at improving the design of products and the industrial processes, in order to make manufacturing strategies sustainable and favoring easier recycling and reuse practices. According to Jelinski et al. industrial ecology is a concept in which "an industrial system is viewed not in isolation from its surrounding systems but in concert with them."[128]

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[124] Ibid.

[125] In the United States, for example, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 would enable the EPA to clear the vast accumulations of plastic that litter the terrestrial, freshwater and marine habitats under US jurisdiction with governmental funds, should plastic be categorized as hazardous material. (Rochman, 2013, p. 170)

[126] Greene, Sean. "Plastic Trash Could Top 13 Billion Tons by 2050. And Recycling Doesn't Help Much." *Los Angeles Times*, Los Angeles Times, 21 July 2017, www.latimes.com/science/sciencenow/la-sci-sn-plastic-trash-20170721-htmlstory.html.

[127] Wearden, 2016

[128] Jelinski, Lynn W., et al. "Industrial ecology: concepts and approaches." *Proceedings of the National Academy of Sciences* 89.3, 1992, pp. 793-797.

It seeks to optimize every step of the total material cycle from raw materials to finished ones, including component and product manufacture, management of waste, and ultimately, end-of-life disposal.

Thus, industrial ecology encourages the development of a closed-loop system in which plastics should be reused and recycled as much as possible. Today, in fact, most plastic waste goes to landfills where it either gets blown away ending up in the ocean or gets subjected to chemicals leaching from the plastic material, contaminating surrounding habitats. Nevertheless, current efforts to 'reduce, reuse, recycle' can sometimes cause other types of problems, as well. Recycling, in fact, often involves the burning or break-down of plastics, processes which require a high consumption of energy, while recycled plastics are not always able to find a "market" or to succeed in substituting the use of virgin materials in new products. Incineration, on the other side, can generate priority pollutants and greenhouse gases. In an ideal closed-loop system, plastics would be continually reused and replenished only when materials become too degraded, thus avoiding unnecessary side-effects related to recycling practices conducted on products which are still in good conditions.[129] However, current regulations and health-and-safety associated concerns make this process extremely complicated to be adopted. Therefore, we are still pretty far away from achieving a complete and integrated closed-loop system in all of our industries.

II.D.3 More formal involvement of NGOs in intergovernmental organization practices

Other scholars advocate for a more formal involvement of environmental NGOs in intergovernmental organizations practices. The argument is that ENGOs are able to transcend national limitations, not being bounded by the state and being able to act

[129] Ibid.

independently when undertaking environmental campaigns. The flexibility typical of the NGOs would also add a missing feature to the mostly governmental and state driven UN system.[130] Thus, a deeper and wider collaboration between the UN and non-governmental organizations is promoted in order to shine light on the opportunity that the use of ENGOs mission statements, objectives and spheres of influence could provide in complementing the efforts of the UN. Furthermore, a greater inclusion of ENGOs in intergovernmental bodies could add expertise, advice, and civil perspective which could be relevant in pushing for specific policies aimed at governing both land-based waste disposal activities and our seas.[131]

This desire for an improved collaboration between intergovernmental organizations and NGOs started to turn into reality very recently, getting tested during the World Ocean day, also known as The Ocean Conference, a UN-led event which took place in June 2017. Here, governments and NGOs from around the world came together to work on projects meant to benefit ocean ecosystems at the global level. The main idea behind the conference was to devote special attention for one week to the health of our oceans and seas. From here, this conference dedicated to the implementation of Sustainable Development Goal 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development), where partnership was meant to play a crucial role. During the week, in fact, governments, United Nations agencies, ENGOs and other relevant stakeholders gathered to "collectively identify ways and means to support the implementation of SDG 14, build on existing successful partnerships, and stimulate innovative and concrete new partnerships to advance the implementation of this goal."[132]

[130] Kong and Cooley, 2016, p. 13
[131] Ibid., p. 13
[132] United Nations. "Help Us Turn the Tide – Engage in The Ocean Conference | UN DESA Department of Economic and Social Affairs." *United Nations Department of Economic and Social Affairs*, United Nations, 7 Dec. 2016, www.un.org/development/desa/en/news/sustainable/help-us-turn-the-tide.html.

Furthermore, during the conference it was acknowledged that "only by mobilizing all stakeholders – governments, the United Nations system, other intergovernmental organizations, international financial institutions, non-governmental organizations (NGOs), civil society organizations, academic institutions, the scientific community, private sector, and philanthropic organizations – human being can stand a chance to find ways to drive actions that are needed to conserve and protect our oceans and seas for future generations."[133]

Thus, looking forward, the United Nations should be encouraged to recruits more NGO representatives within their governing bodies, UNEP and UNDP in particular. In fact, with regards to ocean waste regulation, NGOs command an air of respect due to their highly educated representatives, open approach to advocacy and campaigning, and their civil transparency. In addition, providing a pure reflection of the public's views over ocean waste and pollution, environmental NGOs add a necessary and missing perspective in the policy-making process. Placing representatives as advisors in high level meetings, sending coalitions of NGO staff to conventions and outreach programs, and allocating more funds to establishing governing bodies that include NGOs, all serve as primary actions that the United Nations should consider involving ENGOs at a deeper level and move forward in issues of ocean conservation and protection.[134]

II.D.4 Governmental intervention and regulations

Other "actions" which are strongly encouraged by the majority of environmental NGOs and by many scientists and scholars studying the topic, are based on a more prominent role and intervention by nation-state governments or governmental bodies and

[133] Ibid.
[134] Kong and Cooley, 2016, p. 17

institution at the smaller scale (city-level or county-level). Some of these actions can include[135]:

- The implementation of a producer take-back (EPR) program for convenience food packaging.
- The prohibition of single-use products that pose significant ocean litter impacts where a feasible less damaging alternative is available (e.g. as for polystyrene food packaging and plastic bags).
- Assess fees on commonly littered items, so to incentivize people to avoid or minimize their use.
- Invest funds and establish better recycling programs, where citizens are hold accountable for their own actions and are subjected to tickets if they do not recycle correctly. Similar programs already exist in certain countries and areas, such as Trentino-Alto Adige, a region in the north of Italy, where I grew up.

II.D.5 U.S. focused solutions

Finally, when focusing on the domestic level, there are several environmental initiatives that could help our country to perform better and that could be adopted by other countries as well, in order to reduce our global plastic pollution footprint[136]. With an average of 2.5 Kg of daily waste per person, the US registers the biggest rate of waste generation per capita, of which 13% represented only by plastic. However, the country also disposes of a very good waste management infrastructure, that allows most of the waste to be processed correctly, resulting in only a 2% of mismanaged waste and a 0.9% of

[135] California Ocean Protection Council and National Oceanic and Atmospheric Administration Marine Debris Program, "California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea", 2018, http://www.opc.ca.gov/webmaster/_media_library/2018/04/Strategy_ProposedFinal.pdf
[136] Gubler, 2011

mismanaged plastic waste.[137] Nevertheless, considering that the US are also among the major consumers of single-use plastics, is important to consider any step that could improve domestic plastic waste production and management.

Proper disposal of solid waste is the first solution that comes to mind when thinking about developing countries. However, sometimes this can be a problem in developed countries as well, including the US. A first step which should be taken by all the governments at different levels around the world is to provide adequate and sufficient number of receptacles in public places. Lack of waste receptacles, in fact, may encourage littering, while inadequate emptying of receptacles resulting in overfilling or the absence of proper trash-covers in windy areas may transform them in sources of litter and marine debris. Also, adequate waste facilities and servicing at ports and marinas are necessary to encourage proper waste disposal in these key places: they should be low-cost and convenient to provide an alternative to ocean dumping for this type of ocean-users. [138]

Another important step is promoting and implementing "Best Management Practices" to capture trash in municipal storm water systems. Nets and baffle boxes, which block or catch the litter, can be used at storm drains or consolidated at the end of pipe before connecting to a waterway, to effectively stop the litter before it reaches the ocean. However, a limit to the wide attainability of this option might be related to its high-costs. California has been implementing these best management practices after that a total maximum daily load requirement of zero plastic was created in the Los Angeles River.[139]A similar interesting example of best management practices within the US, is represented by the Inner Harbor Water Wheel, or "Mr. Trash Wheel" project in Baltimore, which combines old and

[137] Figure 4: Jambeck, 2015
[138] Gubler, 2011, p. 35
[139] Ibid., p. 36

new technology to harness the power of water and sunlight to collect litter and debris flowing down the Jones Falls River and accumulating in the harbor[140]. Nevertheless, all these nets, baffle-boxes and machines often fail in catching the smaller pieces of plastic, let alone microplastics, thus underlining the need for other types of action, as well, in order to fully protect our oceans.

Best management practices are incredibly vital to adopt during plastic-related industrial processes as well, so to prevent and/or minimize run-offs that could become very dangerous for the wildlife. One of the most risky and well-known cases are run-offs from manufacturing and transportation processes of pre-production plastic pellets, which can easily become marine debris, turning into a plague to sea creatures that mistake the fish egg sized spheres as food.[141]

Therefore, understanding sources and drivers of marine debris locally has proven to be incredibly relevant, in order to respond with tailored actions across different communities and on behalf of different actors, thus better reflecting the needs of specific situations. Thus, highlighting the impact that marine debris has not only in general, but also on the local economy, emphasizing the loss of ecosystem services and the costs of litter removal, can indeed be a good move in promoting conservation efforts. In fact, an estimated 11.5 billion is spent every year in litter clean-ups and the presence of litter can decrease property values by as much as seven percent.[142]

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[140] Baltimore Waterfront. "Trash Wheel Project." *Waterfront Partnership*, baltimorewaterfront.com/healthy-harbor/water-wheel/.
[141] Plastic Pollution Coalition. "The Cost of Managing Plastic Pollution." *Plastic Pollution Coalition*, 15 Apr. 2010, www.plasticpollutioncoalition.org/pft/2015/8/17/the-cost-of-managing-plastic-pollution.
[142] Keep America Beautiful, "Litter in America. Results from the nation's largest litter study", *Keep America Beautiful, Inc.*, Jan 2010, https://www.kab.org/sites/default/files/News%26Info_Research_LitterinAmerica_FactSheet_CostsofLittering.pdf

To conclude, when looking for solutions to tackle marine plastic pollution, more attention should be focused on local institutions, and on prevention strategies rather than remedial ones. Prevention actions are indeed an economically and environmentally preferred solution to clean ups, as cleaning up marine debris and coastal litter is highly expensive[143] and doesn't lead to any substantial improvement if we don't stop pollution at its source.

This is the same mind-set and approach that drives the efforts of Surfrider and every other ENGO in tackling the current plastic crisis. Although most of these organizations are highly engaged in organizing periodic beach clean ups, which are a very important activities, especially for Surfrider and its communities, they are aware that the concrete influence of these clean-ups is minimal if it is not backed-up by a reduction in consumption. Thus, mitigation efforts such as beach clean ups and new technologies meant at purifying our oceans from plastics represent a positive and important step forward, but they need to be flanked by activities that aim at avoiding total consumption and reducing the levels of pollution, in order to achieve their maximum potential and effectiveness.

The three ideal steps to reduce plastic pollution should, in fact, be: avoid, minimize and mitigate, where avoidance plays the highest and most needed role in leading us to a real change[144]. The other two steps are listed in order of importance and according to their maximum potential of positively affecting the environment. While bans and a culture that incentivizes the use of reusable items (water bottles, coffee mugs, straws etc.) work towards the achievement of the avoidance approach, other initiatives such as imposing fees on single-use plastics that are common polluters or "straws only upon request" aim at minimizing pollution. When these two approaches fail or cannot be implemented for

[143] Gubler, 2011, pp. 30-32
[144] As my mentor during the internship, Judith Marquez, taught me.

political or economic interests-related reasons, mitigation efforts such as clean-ups and annexed technologies come to aid. Nevertheless, despite their importance, without reducing pollution at its source, mitigation efforts cannot be considered a sufficient solution on their own.

Given that much of the ocean debris derives from land activities, policies addressing waste management are thus a great priority and an irreplaceable tool in the fight against the rising tide of plastic pollution. The real goal is to stop any type of pollution before it reaches the ocean. On this purpose, public awareness and education activities, have proven to be the most effective tool in order to encourage people to take further action. Starting from mitigation efforts, education and awareness initiatives can lead people all the way to actively demand their governments to engage in minimization and avoidance approaches, through best management practices and new regulations. Therefore, a multilateral approach that includes public action, governmental intervention and businesses' and industries' commitment in the name of a common interest for our environment is what we need.

II.E. The role of strategic partnerships

Thus, the focus should be on building strategic partnerships, which are valuable in mitigating marine debris and helpful in sustaining coordinated implementation of strategic activities as well. A partnership between scales, indeed, creates a more unified goal and potentially allows for more effective actions at the local and global level.[145]

Finally, when talking about marine plastic pollution and its relationship to coastal states, its repercussions on the financial bottom-line of those communities and states should also be taken into consideration. Ocean degradation, indeed, might directly and inevitably affect the so-called "blue economy", intended as the ocean-related economy and its

[145] Gubler, 2011 p. 29

correlated income and profits, especially when particular coastal areas, states or communities live off tourism, fishing and/or other ocean-based activities. In fact, in these coastal realities that live off businesses directly connected to the ocean, the blue economy often represents one of the leading economic forces, if not the major one. Therefore, any threat to their ocean, is also a direct threat to their economic stability.[146]

The emergence of terms such as "blue economy" in the global governance sphere, the recent approval of new and groundbreaking bans such as those promoted by several states on single-use plastics, recent partnerships between NGOs and businesses and major events aimed at publicizing and raising awareness on plastic pollution are all important results in the effort of moving forward towards a more comprehensive ocean protection against this crisis. This discourse has also been incentivized by recent media and public attention and by major attention catalyzing tools such as the Blue Planet II documentary, which inflamed public indignation on the issue, followed by a wide request for governmental intervention.

State and private interests in the oceans conservation and development are currently high, and a lot of momentum around the topic has been built[147]. NGOs, together with other actors and promoters of the plastic free movement, should thus take advantage of this propitious moment, aiming at "crystallizing" their efforts and ideals through radical governmental intervention and the creation of new legislation and regulations.

[146] The term of blue economy is fairly new in its use in global environmental governance setting, making its first official appearance during the preparatory documentation of the 2012 UN conference on sustainable development, also known as Rio+20. Even though during this conference and similar ones, ocean-related legal binding agreements were not produced, the fact that the term was used raised hopes for a further evolution, permeation and reinforcement of broader discourses around it, with the potential to influence future funding, programs, policies and activism, which should not be under estimated. (Silver, 2015, p. 136)

[147] Silver, 2015, p. 137

This is particularly important at the current time, when both the policy-makers and public minds are more receptive towards the issue, and therefore, hopes are high for some important achievement. We need to identify effective solutions, and act on different levels, creating a multi-actor-driven plan of action, that addresses both local and transnational needs and legislative gaps. Only by developing multi-disciplinary solutions and tackling the problem both at the global and local level, we can have a chance to create sustainable and long-term responses to the plastic pollution crisis.

III. CHAPTER TWO : THE SURFRIDER FOUNDATION

After having analyzed ocean plastic pollution and its nature of wicked problem, the main actors involved in the issue, the legislative framework and its main complications, contradictions and viable solutions, I will now focus on one particular actor, environmental NGOs, and more precisely, on a specific case study: The Surfrider Foundation. The goal is to understand how a local grassroot environmental NGO can make a dent in a wicked problem as wide and multi-layered as global ocean plastic pollution.

In order to better understand how environmental NGOs try to tackle the phenomenon of plastic pollution and how much awareness and engagement there is in the wider society regarding the topic, I decided to join the efforts of the Surfrider Foundation during the fall of 2017.

Joining the Surfrider local chapter and volunteer team that is active in Huntington Beach and Seal Beach and taking part in several programs and initiatives that encompass the Foundation interaction with local communities, I tried to develop an analysis of what can be the actual power and influence of an ENGO such as the Surfrider Foundation in tackling plastic pollutions. The goal was to understand what type of influence could Surfrider have on the larger discourse around plastic pollution and if it could, somehow, produce any influence on its current rates.

It is important to remember that everything you will read in this chapter, is the result and conceptualization of what I have been learning and observing during my 4 months internship process. The theories and observation that will be expressed here are thus the outcome of my research experience, strengthened by information to which I gained access through the analysis of other environmental NGOs' websites, Surfrider's material and very constructive conversations that I had with different actors, representing different stances on

the global pollution issue (business owners or sustainability team managers, scientists and experts, non-profit leaders, etc.)

From my analysis, I can conclude that the Surfrider Foundation has two main goals, which consist of educating the community, stressing the message that we are all accountable for our actions, and lobbying governments, aiming at influencing legislation towards environmental protection. These two goals are strictly intertwined. The first one is omnipresent throughout the organization activities and is the real everyday purpose of the Foundation, to which all chapters and initiatives are inherently committed. Surfrider believes that education and raising awareness in the communities have the great power to change people mind-set and consequently, their behavior towards littering, plastic usage and waste management. The non-profit has also achieved several important results on this front, especially winning the support of certain businesses that decided to switch to "greener behaviors" and obtaining the favor of many citizens within communities that are increasingly becoming more conscious of the environment. On the other side, influencing policies and regulations is a very lengthy process, which often requires the formation of partnerships and coalitions with other environmental groups, activists and NGOs to build a united, strong front, able to achieve a legislative victory at the local level and beyond. In fact, although lobbying remains the second primary goal of the Foundation, victories are not achieved very often. The intertwinement among goals derives from the fact that Surfrider's first goal, education, plays a strong role also within the organization's lobbying processes, where citizens are encouraged to be central actors, voicing directly their own desire for governmental intervention to the city-councils. Businesses that commit to voluntarily support Surfrider's initiatives are also important lobbying actors, given that they provide and set an example of how it is possible to invest in greener behaviors, while benefiting economically alongside. Ideally, from the local level these regulations have the

potential to reach out and inspire neighboring cities to follow suit, thus expanding at the state and global level.

Communities' education plays also a key role in determining the potential success or failure of new environmental legislation. In fact, as we previously observed, opposition against initiatives that are felt as an overstretch of governments' power or an imposition on citizens' free will can be strong and result in the repeal or dismissal of new regulations. Therefore, Surfrider's prime need is that to show and explain to people which the reasons are lying behind the necessity and the request for change, looking for their support and encouraging them to demand or sustain governmental interventions. Only working together on these two fronts, a change in local or state-wide legislation can actually take place without risking being faced by strong opposition, or worst, a repeal action.

III.A. Brief introduction to the Surfrider Foundation

The Surfrider Foundation is an ocean protection grassroot organization which is characterized by a unique duality: while preserving a strong local character and tight connection to the local communities, Surfrider also aims at maintaining a certain global outlook and very universal goals. Every chapter's initiatives, programs, campaigns, activism networks and actions are tailored according to the local community and local area and can differ among chapters and countries. However, the positive change which the Foundation is trying to inspire and create transcends the federal and national level, and ideally, aims at affecting the global one. Thus, these ideals reflect two different and co-existent shades of the same organization. First, the very local and community-centered one, reflected in the Foundation structure, which is based on local chapters that are each one active in their own community, volunteer-driven and reflective of the organization's roots

and history, followed by the second one, which only evolved over time and is set on satisfying global concerns.

Thanks to this strong duality the Surfrider Foundation has become a well-recognized and leading ENGOs not only at the domestic, but also at the transnational and global level.

Surfrider's origins, date back to over 30 years ago, rooted in the small surfer community of Malibu, CA, where a small group of surfers decided to create this NGO in order to protect their waves, at the time threatened by development plans and pollution. Their mission was to protect what they loved, and thus, they decided to take action, organizing a group aimed at protesting the threats that their local surf break was subjected to. When they succeeded in protecting their beloved surf spot they were not aware of how their small victory was just the first one of a long series to come and of how their initiative would have turned into a major organization very soon.

Today, the Surfrider Foundation protects much more than surfing-spots and waves and reflects much more than the interests of one single local community of surfers. Nowadays, Surfrider has built a network of volunteers and coastal defenders who transform their passion for our coasts into lasting protection, and bridging local knowledge with national experts in law, policy and science, the Foundation has created a large team that strives for success. Over the years, Surfrider quickly grown to an international non-governmental organization with a global presence, that not only counts over 80 chapters on the domestic soil, but it also reached a consistent presence in Europe, with over 40 chapters, making its way to Brazil, Canada, Australia, Japan, Argentina and Morocco too. The real engine that drives the Foundation is therefore embedded in the chapters' volunteers' pure

dedication, their passion, and motivation which enable Surfrider to move further on in its goals every day, becoming a major leader in beaches and coastal protection.[148]

Even though different chapters can have different campaigns, programs, community support, involvement, and even different size within and across regions and states, they all share the same mission and the same strength, which is to ensure the protection and enjoyment of the world's ocean, waves and beaches through a powerful activist network of very passionate and dedicated people.

Nevertheless, the Surfrider Foundation has identified 5 key areas on which its activist efforts are concentrated, which are common to all the chapters' activities around the world: beach access (keeping beaches accessible to everyone), clean water (preventing pollution from reaching the ocean), ocean protection (preventing and addressing present and future dangers for the ocean), coastal preservation and plastic pollution.

As it appears clear, most of the recent issues that have proven detrimental and dangerous for our oceans belong to more than one of the above topic areas, so as many of the different chapters' initiatives do too, due to the fact that ocean conservation issues inevitably lead to an overlapping and intertwinement of these key areas with one another.

III.B. The relevance of marine plastic pollution in ENGOs' action.

Before diving into the specifics and my analysis of how the Surfrider Foundation tries to make a dent in the vast and wicked problem of ocean plastic pollution, I believe that it's worthy to try to understand why so many ENGOs and activists are nowadays dedicated and engaged in studying, resolving, or at least improving, this particular issue, to the detriment

[148] Surfrider Foundation. "About Us." and "Our Work." Surfrider Foundation, https://www.surfrider.org/

of many others which are pushed in the backseat, such as ocean noise-pollution, ocean-acidification or coral-bleaching.

I believe that the answer comes from several factors. First of all, the fact that new studies, documentaries, images and videos and the long-time efforts of many environmental groups were finally able to draw media and public attention on an issue that has reached an indisputable severity and urgency to be addressed. From here, the shift to a more serious and consistent coverage of the issue came naturally, alimented by fact that experts and researchers have shown, now more than ever, that there is no more time to postpone short and long- term solutions if we want to address plastic pollution and save our oceans. Probably, this process has also been the result of a newly-achieved global environmental maturity on sustainability and environmental protection issues, that has slowly maturated over the past decades, from Rio '92 on. This newly-discovered maturity has now started to manifest itself more openly, not only among the public, but also in governmental and intergovernmental institutions, as many examples mentioned during this study testify.

Nevertheless, the above reasons are not sufficient to explain why plastic pollution has attracted so much attention and alimented such a big environmental movement around itself. Therefore, I will try to "dig deeper".

Plastic pollution is an issue which differently from other major environmental phenomena, can be easily quantified and observed by everyone, in every corner of the world. Plastic presence in the waters and on global beaches is sadly an everyday occurrence, which cannot be denied, because it concretely manifests itself in front of our eyes. Moreover, the plastic crisis' current status has undeniably reached a tipping point, with massive overproduction, overconsumption and exorbitant volumes of waste, that the earth is not able to "digest" anymore. Each one of us can witness the phenomenon while

walking on our favorite beach, taking a ride on a boat, or swimming in the ocean. In alternative, thanks to the strong media attention that has recently characterized the issue, a multitude of videos and debates on the topic are currently available online, popping-up on our social medias feeds, or in the newspaper, television programs and so on, thus making it hard, if not impossible, to be blind to this threat.

Heart-breaking images of marine wildlife, birds and turtles struggling to survive and getting hurt, or worst, die, due to the polluted environment that derives from our irresponsible behavior, are meant to attract even more adepts to "the plastic free movement". Thus, using marketing logic and psychological tools, environmentalists and activists seems to have reached a certain propitious moment in the ocean plastic pollution discourse and to have create a certain tension that cannot longer be ignored by governments and businesses.[149]

Other factors that differentiate plastic pollution from most of the other ocean-conservation issues, are the following:

a) It involves the individual responsibility of each one of us. Differently from many other environmental issues that transcend from our control and responsibility, in plastic pollution we have the capacity to independently affect the situation. Probably not in its entirety, but we can, at least, do our part. Reducing our own plastic footprint through more eco-friendly and sustainable choices, engaging in better recycling programs, boycotting businesses that are unethical in their plastic consumption and waste management, and taking part in educational activities such

[149] An example of this is the video that became viral online a couple of years ago, portraying the effects that a single straw ingurgitated by a marine turtle can have on the animal, causing it sufferance and risking killing it. After an exorbitant number of views registered immediately after its upload, and a massive wave of awareness and consciousness on the impact that plastic straws can have on wildlife, the video has become the manifesto of the fight against plastic straws.

as beach clean-ups or joining groups and organizations that try to sensitize and educate other people on the issue are only some of the many “green actions” that each one of us can independently engage in. In addition to that, talking to restaurant owners, industry CEOs and government officials, trying to inspire a change in other people and institutions, is just as equally important.

b) Small and local improvements, which can have a bigger effect over time, are relatively easy to adopt, and somehow observable and quantifiable when it comes to marine plastic pollution. If new and stricter regulations were to be adopted at the local level in most of the developed countries which have the opportunity and facilities to do it, substantial reduction in the overall waste volumes could be achieved. Examples of governmental initiatives and local policies that could create a noticeable improvement in the plastic pollution status along coastal beaches of the area are listed below.

- Limit or ban the consumption of non-necessary items such as plastic straws, Styrofoam, plastic bag, plastic cutlery, drink stirrers, plastic cotton buds, etc.
- Implement fees and taxes on the use of disposable items, thus incentivizing the use of personal and reusable food-ware and drinking containers.
- Improve the waste-recycling system, supporting deposit return programs on empty containers, and putting in place incentives or fees that incentives the citizens to achieve higher compliance rates to more sustainable and eco-friendly practices.
- Issue regulations and legislation that requires restaurants, supermarkets and other businesses to comply to stricter standards aimed at incentivizing reuse, recycling, and models that limit as much as possible pointless plastic waste.

c) Plastic pollution intrinsic global nature, given by the ability that plastic has in moving around countries and continents through water-streams and travelling across oceans due to wind and currents, covering very long distances in a very short time, makes it a relevant topic to the transnational community. This, however, also creates issues of hard-to-assess accountability and responsibility, because it is nearly impossible to identify where the plastic comes from, once that it has reached the ocean. This, consequently, prevents any responsible countries from being able to be held accountable for their actions, thus voiding the power and efficacy of mechanisms such as international shame, legal actions or fines.

All these reasons make ocean plastic pollution a subject that is particularly close and relevant to many people, not only for its immediate need to be addressed and solved, but also for the fact that individuals have a saying and a role in it. Partial solutions to the crisis are available, and more than what is currently done can be achieved. Now that the peculiarities that make the plastic pollution phenomenon the new "hot topic" in ocean conservation have been explored, I can proceed in analyzing the several efforts and initiatives organized and sponsored by the Surfrider Foundation to tackle the phenomenon's wicked nature.

III.C. Surfrider's initiatives to tackle the rising tide of plastic pollution.

In order to better comprehend the initiatives and education goals of Surfrider, is important to provide a general overview of which are the most common types of plastic pollution which an environmental NGO will come across during its work. Most of my analysis, in fact, is based on a reverse-logic framework: starting from the most common items responsible for marine plastic pollution, I will try to offer, on the base of the Surfrider Foundation work, some solutions which could help prevent the massive volumes of litter

which are registered in our oceans each year. This type of framework is the same that is spontaneously and automatically used by most of the environmental groups around the world to set their goals and plans of action, aiming at making a dent in the wide and wicked problem of plastic pollution.

The following chart is a chart elaborated by “5 Gyres”, presenting the top 20 polluting items which are recovered during beach clean-ups in the entire United States, their percentages and the related better and best alternatives existing at the moment, which can act as partial or long-term solution. In my view, it is a very interesting and useful chart in order to better understand how ENGOs such as the Surfrider Foundation act, choosing their targets and organizing their campaigns on the base of lists like this.

MATERIALS IN THE TOP 20 PRODUCTS

PLASTIC PRODUCT	IN ENVIRONMENT COUNT	IN ENVIRONMENT %	LIKELY PLASTIC-TYPE (POLYMER)	BETTER ALTERNATIVES NOW	BEST ALTERNATIVES NOW
1 Food Wrappers (candy, chips, etc.)	350818.0	18.6	Several different plastics**	More work needed on bio-benign alternatives	Bulk purchasing of food in reusable containers
2 Bottle Caps (Plastic)	315488.1	16.7	Polypropylene (PP #5)	"Connect the Cap" technical fix available	Functional replacement with reusable bottles
3 Beverage Bottles (Plastic)	227018.0	12.0	Polyethylene terephthalate (PET #1)	Increase deposit to increase collection rates	Functional replacement with reusables
4 Bags (Plastic)	178144.0	9.4	Primarily Low-Density polyethylene (LDPE #4)	Natural, bio-based shopping bags (paper)	Functional replacement with reusable bags
5 Straws, Stirrers	142745.0	7.5	Polypropylene (PP #5)	Paper or wood straws/stirrers	Functional replacement with reusable straws/stirrers
6 Lids (Plastic)	97751.2	5.1	Polystyrene (PS #6)	More work needed on bio-benign alternatives	Functional replacement with reusable cups
7 Utensils	93829.0	4.9	Polystyrene (PS #6)	Natural, bio-based biodegradable utensils (bamboo/wood)	Functional replacement with reusable utensils
8 Cigarette Butts*	61341.7	3.2	Cellulose Acetate Fiber	Filter-less cigarettes	Plant-based biodegradable cigarette filters
9 Take Out/Away Containers (Foam)	60697.8	3.2	Polystyrene (PS #6)	Plant-based biodegradable take-out containers	Functional replacement with reusable take-out containers; work to change health codes to enable this change
10 Take Out/Away Containers (Plastic)	56788.6	3.0	Several different plastics**	Plant-based biodegradable take-out containers	Functional replacement with reusable containers ***
11 Cups, Plates (Plastic)	52943.9	2.8	(PS #6) & (PET #1)	Plant-based biodegradable cups	Functional replacement with reusable cups
12 Cigar Tips	50196.0	2.6	Polystyrene (PS #6)	Functional replacement with reusable cigar tips	Ban of smoking in public space
13 Cups, Plates (Foam)	49274.5	2.6	Polystyrene (PS #6)	Plant-based biodegradable cups	Functional replacement with reusable cups ***
14 Tobacco Packaging/Wrap	35185.8	1.8	Polypropylene or Polyethylene (#5 or #2)	Plant-based biodegradable alternatives	Natural bio-based materials, like cellulose
15 Balloons	30709.3	1.6	Latex or Mylar	Plant-based biodegradable alternatives	Cultural alternatives to balloon releases
16 Other Plastic Bottles	25395.6	1.3	Several different plastics**	Increase deposit to increase collection rates	Functional replacement with reusable bottles
17 Cigarette Lighters	22608.5	1.2	Polycarbonate (PC - #7)	See best alternative	Functional replacement with matches or refillable non-plastic lighters
18 Personal Care Products (condoms & tampon applicators)	16522.2	0.8	Several different plastics**	See best alternative	Natural bio-based materials
19 6-Pack Holders	9188.0	0.4	Low density polyethylene (LDPE #4)	Plant-based biodegradable alternatives	Paper box beverage holders
20 Diapers	6466.9	0.3	Several different plastics**	Plant-based biodegradable alternatives	Cloth diaper services when available

** Counts of cigarette butts were divided by 20 to represent packs rather than individual cigarettes.*
*** These products are made from several different types of plastic, and a full analysis for each product is not included here.*
**** In many cities, this will require new health codes to permit reusable containers in this context.*

Fig. 8: Better Alternatives Now B.A.N. List 2.0[150]

[150] Figure 8: Better Alternatives Now B.A.N. List 2.0 was created with the partnership of 5 Gyres, Algalita Marine Research and Education, Californians Against Waste, Clean Production Action, Plastic Pollution Coalition, Responsible Purchasing Network, Seattle Public Utilities, Story of Stuff, Surfrider Foundation, & UPSTREAM. (UpStream. "BAN List 2.0." *Upstream, Real Change Starts at Source*, Nov. 2017, upstreampolicy.org/ban-list-20/.)

Moreover, this "B.A.N. List 2.0", went even one step further. Utilizing "Litterati", a mobile app that allows users to document corporate logos or names on polluting plastics, "5 Gyres" was able to assign some brand names to those items, thus turning this list into a tool that can be used to encourage companies to address their own responsibility in the plastic pollution problem. Similar strategies are used by Surfrider as well, through the implementation of educational games where people are asked to guess where certain specific items come from. It's thus very easy for the participants to start associating the green thick straws to Starbucks, white and red cups with a palm-trees pattern to In-N-Out, specific colors of bottle caps to their well-known associated brand and so on. This showcases a business-accountability pattern, which is extremely effective in holding businesses accountable for their share of responsibility in the plastic pollution crisis and in educating people on how littering and individual actions can have direct consequences on our eco-systems.

However, if these types of shaming mechanisms and awareness processes, in which both businesses and consumers are made responsible for their behaviors, are quite common in the work of NGOs, legislative victories are harder to achieve.

Since 2006, according to the Surfrider Foundation website, the organization has won 158 campaigns on plastic pollution[151]. Most of them are small municipal and local campaigns, mostly bans, which as previously explained, are at risk to get dismissed each time that a new city council gets approved. Nevertheless, each of these victories have a massive value, since they have been achieved after long campaigns, coalition efforts with other grassroot organizations, lobbying processes and usually, with the favor of at least one or more city council members that had the topic particularly dear to their own

[151] Surfrider Foundation. "Campaigns." Surfrider Foundation, https://www.surfrider.org/campaigns

environmental concerns. Even more importantly, these victories are reflective of a changing reality and a matured awareness, showing that banning certain types of plastic is possible and that other solutions are implementable, in order to limit or prevent single use plastics from polluting our oceans, making us believe that there is a concrete opportunity for a better future.

Speaking about the mechanism used by Surfrider and many other NGOs when it comes to campaigning for victories both at the local and domestic level, there are two different considerations to keep in mind on which their action is based. These two different approaches may seem at the antipodes, but in reality, they comprise a tight interaction and complementation mechanism, which is vital to achieve success. Surfrider, indeed, starts from the assumption that governments and institutional regulations (both at the local and domestic level) will often follow wider society demands for changes in a specific domain or a particular "momentum" that has been created on a certain topic by a raise in global awareness, as for the ocean plastic pollution phenomenon. Therefore, as the first step we need to modify the consumers mindset, educate the society and encourage people to raise and speak aloud their concerns, demanding governmental intervention and partnering with willing businesses that will set an example, showing that change is possible. However, following this campaigning phase and a rise in public awareness" local government intervention will then become necessary in order to issue standard regulations which will turn businesses and industrial environmental efforts from voluntary to mandatory. This is the only path that will ensure compliance, requiring businesses that otherwise would have continued to engage in their behavior of "business as usual" to comply to the new regulations and setting a deadline for a change to occur. Often, local actions can then influence other cities to commit to change and over time, reach statewide legislation, as it happened for the plastic bag ban case here in California.

At the local level, in California, multiple cities have already adopted laws to ban plastic straws and other single-use plastic utensils, such as Malibu and Manhattan Beach, while other cities are approving regulations that will require businesses to serve straws only if explicitly request by customers, as in the Long Beach case. Meanwhile, 115 other cities[152] have already implemented laws that either ban or regulate polystyrene in specific products.

Similar movements are developing also in other states, showing how the momentum is extremely propitious and sensitive to the plastic pollution issue. The mechanism showed above has been implemented by many environmental groups all over the country and the world, trying to move from public activism to a legislative framework and from city-wide regulations to stricter and more permanent laws at the state level.

Thus, before moving on to analyze the different actions and solutions that Surfrider promotes to reduce the volume of marine litter, we need to analyze more in depth the last premise that is behind Surfrider programs and activities. This will also help to better understand how the organization's efforts have a direct impact on ocean pollution reduction. According to this theory, which I introduced in the previous chapter, there are three ideal steps to follow in order to improve the drastic ocean degradation to which plastic pollution has led. They are here cited in order of importance and of their potential effects on improving the current situation: avoid, minimize, and mitigate.

III.D. Avoid, minimize and mitigate

The first step, avoiding, simply means that we need to reduce the volume of plastic we are consuming and throwing away every-day. Our models of consumptions are simply unbearable for the earth at the current rate, and the only real way to reduce plastic pollution

[152] Californians Against Waste. "Polystyrene Local Ordinances." *Californians Against Waste*, www.cawrecycles.org/polystyrene-local-ordinances/.

in the oceans is to start being more responsible, conscious and use less plastic. This may involve a change in the patterns and factors we value when choosing between products at the supermarket, favoring items with less packaging or no packaging at all. Or, it might require a change in the lifestyles and everyday habits that have characterized the last decades of our lives, such as choosing to eat your meal at the restaurant or to consume your coffee at the café, instead of promoting a "to-go culture", made of disposable items, mostly consisting of single-use plastics. It might also involve other sacrifices on our behalf as customers, such as individual efforts in bringing our own reusable bag, coffee-mug, bottle, lunch container, or a set of reusable silverware, , etc. Or, it might require bringing our own containers when going grocery shopping and choosing to buy our products in green supermarkets or farmers' markets that do not sell packaged products. Plastic reuse and avoidance of single-use plastic are indeed a major part of pollution reduction. Another form of avoidance is also represented by total bans implemented either at the city or state level.

Minimizing, instead involves partial bans or policies which enforce fees and levies on single-use plastic products, but also entails the engagement in major efforts towards more-efficient recycling programs, deposit-return programs for specific containers and similar initiatives.

Lastly, the mitigation phase involves all the efforts that are conducted in order to reduce the detrimental consequences of bad environmental practices to their fullest potential. Examples of mitigating efforts are provided by beach clean ups, aimed at reducing the volume of plastic re-entering or entering the ocean from the beach, or by the advanced technological projects which are currently being developed to create machines able to remove litter from the ocean.

After these important premises, I can now proceed in analyzing and evaluating Surfrider's most relevant programs and activities, oriented at reducing ocean plastic pollution through this triple-goal framework (avoid, minimize and mitigate) and at avoiding the most common types of items from turning into marine debris.

III.D.1 Beach clean-ups (mitigate)

Beach clean ups are the most successful initiative in terms of number of participants, at least in the chapter where I volunteered, which normally registered at least 150 or 200 people each time, with special event able to attract over 400 participants (e.g. International Beach Clean-up Day, Ohana Day, International Surfing Day, etc.). Obviously, they classify as a mitigation effort, providing a remedial action to all the waste and marine pollution we create. They are held once a week during the summer season and every two weeks, on average, during the other seasons of the year. Special beach clean-up events, in addition to the regular ones, may also be organized in name of specific celebrations or in collaborations with particular corporate brands that want to engage their employees in a "give back to the community" and environmental-friendly activity, while also training their team-building skills.

As previously mentioned, the impact of beach-clean ups can only be minimal compared to the massive numbers that characterize worldwide the volume of plastic pollution in our oceans. This is especially true when considering the fact that the majority of the plastic debris lies on the sea-bottom, or alternatively, sits on beaches in remote places and in developing countries that lack the necessary infrastructure for a correct management of solid waste and these types of educative programs and mitigation efforts. These same activities that are conducted in many developed countries by several NGOs, would be extremely relevant and effective, probably leading to even bigger results in terms of

pollution reduction, if they were conducted on a weekly or monthly base in those developing countries that are major polluters.

Nevertheless, the results achieved by the Foundation are incredibly positive. On average, from 2012 to 2016, the chapter I volunteer for collected alone over 7'000 lbs of trash per year, number that skyrocketed in 2017, when they registered a massive collection rate of 13'500 lbs. The massive rise in trash collected last year, might be connected to a special beach clean-up that was held in an exclusive location close to a river jetty, that it is not normally accessible without an authorization being a military area, and in which, being remote and close to a homeless camp, an immense quantity of trash was found and collected. However, it might also be connected to the growing numbers of beach-clean up and harbor clean-up events, which year by year are organized and with their ability to cover increasingly vaster areas (sometimes even accessing and cleaning up areas that are hardly open to the public and where most of the trash accumulates.) Less likely is the fact that the amount of trash on our beaches is growing, considering that as confirmed by Fig. 5, a decrease in plastic bags and straws collected during beach clean ups has been registered. The image shows that increasing awareness and local legislation efforts have been effective in slowly diminishing the presence of these two items as marine debris.[153]

The following chart shows the total amount of litter collected by the Surfrider Foundation Huntington Beach and Seal Beach chapter and the total number of volunteers for each year, in the timeframe 2012-2017.[154]

[153] Xia, 2018
[154] Huntington Beach and Seal Beach Surfrider Foundation, "Cleanup Results." *Surfrider Foundation - Huntington Beach / Seal Beach Chapter - Programs*, hsbsurfrider.org/cleanup-results.

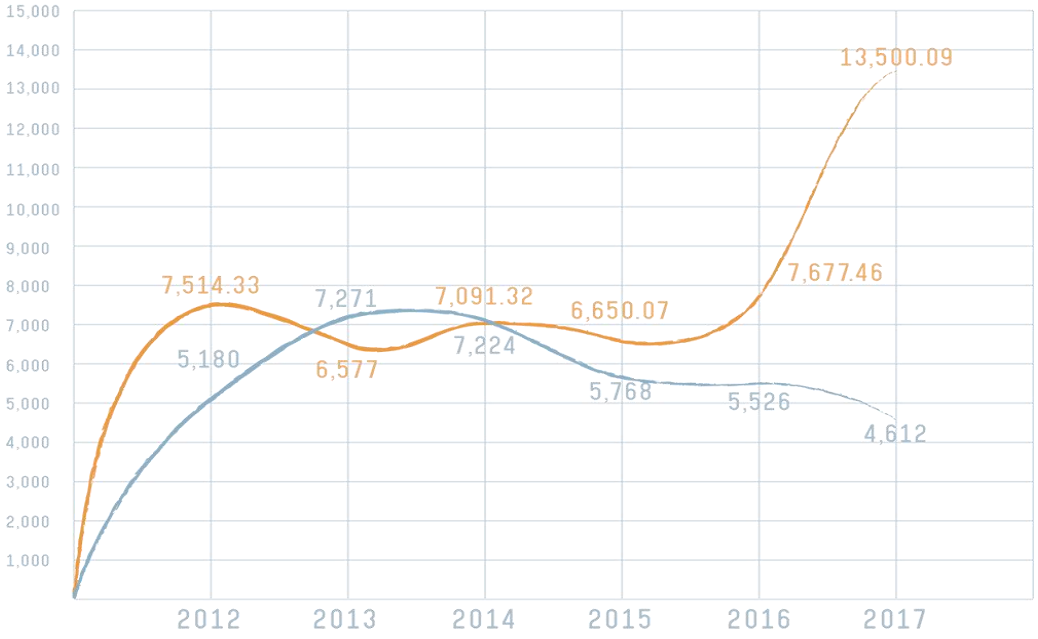

Fig. 9[155]

The peculiarity of Surfrider's beach clean-ups derives from the fact that besides reducing litter presence on the beach, they also play a vital role in the fight against plastic pollution through education and instructional values. During these events, in fact, participants and kids are provided with mini-lectures on ocean plastic pollution, learning more about what they are likely to find on the beach, how the trash most likely arrived there, what they can do to avoid such pollution, and what the ocean gyres are, etc.

The program director for the chapter also takes the time to instruct the participants on the best procedures and practices to engage in their role at the beach clean-up so that they can have fun while also achieving the maximum efficiency in collecting and separating different types of waste. Instructional material is also available at the Foundation's pop-up tends, where brochures, graphic material, pictures, statistics and data from the previous beach clean ups are available for the participants that want to learn more and expand their

[155] Figure 9: Huntington Beach and Seal Beach Surfrider Foundation, "Cleanup Results." *Surfrider Foundation - Huntington Beach / Seal Beach Chapter - Programs*, hsbsurfrider.org/cleanup-results

knowledge on the issue. During these events, the chapter also takes the opportunity to show to the participants the most common items that are normally found on the beach and in which proportions. Therefore, under their tents, the Foundation regularly has a consistent variety of common pollutants displayed for the public, such as huge jars containing a massive number of cigarette butts, a big wheel-barrow full of straws (glued together so that they will not blow back onto the beach), and a big tub full of water-bottles caps. This is supposed to act as a deterrent against new pollution, making people aware of which items deserve their maximum attention when they are used or consumed, and even more importantly disposed, in order to prevent them from turning into marine debris or litter on the beach.

Little containers with syringes or other dangerous items, are also displayed to sensitize people in being cautious about what they could find. As this is all material that has exclusively been collected on the beach, it has an immense visual impact on the participants. It makes people reflect on how their independent behavior has a deep effect on the eco-systems around them and raises awareness on the gravity of the issue of plastic pollution and on the dangers of having such high rates of trash in our waste streams, since they will eventually end up on beaches and in our oceans.

Related to the beach clean-ups, an important initiative that is worthy to be mentioned is the “hold on to your butts” program, where all the cigarette butts that get collected during the beach clean-ups are stored and then shipped to Terracycle, a specialized company, which diverts them into garden benches. This is extremely important as an example of how reuse and closed loop systems are possible, and of how there is always a better alternative to simple discarding of trash in the environment. The same program also deserves credit for the installation of numerous cigarette-collecting bins along main streets and highly-frequented spots in numerous coastal cities, including Huntington Beach and Seal Beach.

This initiative prevents more cigarette butts from being discarded in the environment and from eventually ending up into the ocean.

Finally, on top of the numerous beach clean-up events, the Huntington Beach and Seal Beach chapter of Surfrider also decided to organize monthly Harbor clean ups, where people are offered the chance of kayaking around the Huntington Beach Harbor, while collecting trash. The goal of this initiative is to target the portion of land which is only accessible by kayak and to empty the nets which are positioned in strategic points of the harbor to catch the most voluminous litter, to prevent debris from accumulating in these areas, not allowing them to break down into smaller pieces, making their way to the ocean. Very often, voluminous amounts of trash and the more disparate items tend to be collected during these monthly clean-ups, reconfirming them a very efficient mitigation measure.

III.D.2 Ocean Friendly Restaurant Program (avoid and minimize)

Another of Surfrider's program focused on fighting ocean plastic pollution is the Ocean Friendly Restaurants Program (OFR), which is mainly centered on improving the environmental performance of restaurants and cafés in coastal towns.

The aspect of this program that is the most compelling to my research is its focus on limiting the consumption and waste generation of single-use plastics within these businesses (mainly plastic cups, plastic straws, plastic cutlery and so on). It is in these businesses, in fact, that single-use plastics use and waste generation reach one of the highest volumes, compared to other sectors.

Thus, the program aims at implementing avoidance and minimization strategies, depending on the success and receptiveness of the businesses.

The primary goal is to educate restaurants and cafés on the dangers and extremely negative consequences that single-use plastic items can cause to our environment and our

oceans, incentivizing and convincing them in limiting and if possible, avoiding, the consumption of such products all together. Many eco-friendly and biodegradable alternatives have been made available in the recent years and are the solutions that Surfrider and other NGOs incentivize those businesses that cannot run their activities without relying on disposable items to follow. However, one of the main challenges is the increased cost that comes together with the environmental benefit of these products.

Common discourses and debate target Styrofoam (aka polystyrene) items, plastic straws, plastic cutlery and to-go plastic bags.

In order to get an approved "membership" to the Surfrider Foundation's OFR program, cafés and restaurants need to demonstrate their ability to satisfy and be compliant to all of the following four criteria: 1) no expanded polystyrene foam use in their to-go containers; 2) proper recycling practices need to be followed; 3) only reusable tableware is allowed for on-site dining and to-go utensils need to be provided only upon request; 4) no plastic bags are offered for takeout orders.

In addition to be compliant to these 4 criteria, which are strictly focused on limiting the volumes of plastic consumption, businesses also have to choose to pursue three of the following: 5) plastic straws are provided only upon request; 6) no beverage is sold in plastic bottles; 7) a discount is offered to customers with reusable mugs, cups, etc.; 8) vegetarian or vegan food options are provided on regular basis (so to reduce impact of climate change, rainforest destruction, pollution, and to save water, etc.), and all sea-food must be a 'best choice' or 'good alternative' as defined by Seafood Watch or certified as sustainable; 9)

engagement in water conservation efforts such as low flow faucets and toilets; 10) energy efficiency efforts such as LED lighting and Energy Star appliances.[156]

The issue of limiting or banning single-use plastic at the city-level, as previously explained, is very delicate and involves a long process of campaigning, lobbying and finding the right allies on ENGOs' behalf. However, as anticipated, governmental interventions are eventually needed to go beyond the simple volunteering efforts of eco-conscious businesses, and to issue regulations that can be respected and taken seriously by all the commercial activities and customers of the area. Currently, in the Orange County region, only few are the regulations in place and the cities interested in containing single-use plastic waste. Newport Beach, one of the more active on this issue, has already passed a ban on Styrofoam in food-related businesses, and requested the collaboration of Surfrider in order to get as many restaurants as possible to switch from plastic to paper straws and to educate the staff to start handing straws out only upon request. Meanwhile, Long Beach, just recently approved a similar policy regarding a ban on Styrofoam, together with issuing a formal request for businesses to start handing out plastic straws only upon request, thus limiting their plastic waste.[157] However, similar regulations are very hard to pass and most of the work in this field still needs to be done on a volunteer and individual base by single businesses. Restaurants, cafés and similar activities need to be personally interested in committing to eco-friendly initiatives and behaviors, transcending the absence of regulations and interventions on the city or state level and being eventually willing to

[156] Surfrider Foundation. "Quick Guide for Restaurant." *Ocean Friendly Restaurants Program*, Surfrider Foundation, drive.google.com/file/d/0Bxkup9ZmbXnoRW9Hc2RzTzJCQVk/view.
[157] Surfrider Foundation. "Polystyrene Ordinances." *Surfrider Foundation*, www.surfrider.org/pages/polystyrene-ordinances.; Boyce, Simone. "Long Beach Bans Plastic Foam Containers to Promote Environmental Sustainability." *KTLA*, KTLA, 5 May 2018, ktla.com/2018/05/05/long-beach-bans-styrofoam-containers-to-promote-environmental-sustainability/.

allocate extra funding to cover for more sustainable choices that phase out single-use plastics.

Therefore, what the Ocean Friendly Restaurants program is trying to do, is to make up for that missing legislation framework, through an education and awareness-raising initiative, which aims at making businesses conscious of their role and responsibility in ocean plastic pollution. With this purpose in mind, the organization sends volunteers to talk to restaurants owners and managers in the area, sharing with them their main concerns about ocean plastic pollution and single-use plastic issues and seeing if among them, anyone would be interested in committing to the program, eventually modifying their practices in order to comply with the requirements stated above.

Besides Surfrider, many others ocean conservation NGOs, both domestically and internationally, recently committed to the above-mentioned efforts, trying to minimize and possibly, bring the consumption of single-use plastics to zero among customers and food service businesses.

One category of items which received major attention over the past couple of years and that was targeted by many environmental campaigns, not only in the United States, but all around the world, as the second most urgent item to ban right after the “bag-ban”, are plastic straws. Plastic straws are facing increasing opposition and have been chosen as the main, current target for “ban proposals” by many NGOs and activists engaged in reducing single-use plastics consumption in many different countries. This choice is both related to their nature as main pollutants in the ocean, often responsible for hurting marine wildlife, and to the fact that compared to other items, they are not indispensable.

Hence, if the process to minimize other single-use plastic products which are used daily, bringing their consumption rate to zero is quite hard and complicated, plastic straws

can effortlessly be served only when needed or explicitly requested, and are easily substitutable by more eco-friendly alternatives.

Simply looking at the US, indeed, it has been estimated that up to half a billion plastic straws are consumed every day, just to be discarded a few minutes later[158]. Many of these straws come unrequested, served as "complementary" to glasses of water, soft-drinks, or other types of drink that do not require one for their consumption. This not only creates an immense amount of waste, that could easily be avoided, but it also translates into pointless expenses and loss of profits for those businesses that engage in such behavior.

On the contrary, switching to a "straws only upon request" model, and therefore, massively reducing the monthly number of straws that get consumed, businesses could largely reduce plastic waste volumes in the food-service industry, while also be able to save a consistent amount of money in the long run. These savings could then be invested into a switch to more eco-friendly options (such as reusable straws in bamboo, glass or metal) or biodegradable paper straws, covering the increased cost of these green alternatives.[159]

Hence, as we can observe, this program is extremely important in order to educate and raise awareness in food-service businesses on the waste they create and on the harmful consequences their plastic-product choices may generate. The Ocean Friendly Restaurants Program asks them to take responsibility and adopt mechanisms of "avoidance and minimization", which can make a substantial difference.

[158] The Times Editorial Board. "Half a Billion Plastic Straws Are Used and Discarded Every Day. What an Unacceptable Waste." *Los Angeles Times*, 16 Jan. 2018, www.latimes.com/opinion/editorials/la-ed-straws-on-request-20180116-story.html.
[159] Bookers, Linda. "Straws", *The Brook Productions*, LLC, 2017

III.D.3 Activism, campaigns and lobbying efforts (avoid, minimize, mitigate)

If education seems to be the true hidden gem and purpose of all Surfrider's initiatives, the other "pulsing heart" of the Foundation is represented by its challenging but tireless efforts to lobby governments at different levels, while creating an active and stable network of activists among communities.

Thus, education and lobbying, the two driving forces behind Surfrider's work and existence, are also extremely interconnected and intertwined. Education, indeed, constitutes the first step to strengthen the Foundation's lobbying efforts and to attempt to influence local, state-wide and even transnational legislation. Instructional efforts create a network of engaged citizens that are not afraid to voice their environmental concerns and demands and to require governmental intervention and a rightful prioritization of significant environmental topics on governmental agendas.

Surfrider's lobbying efforts start at the local level, with different chapters of the non-profit acting contemporarily on trying to shift legislation in their own area of competence. Each chapter engages in one on one conversations with different City Council members, presenting the issue, explaining the problem, showing facts and bringing infographics and data that display why governmental intervention is needed and why the issue matters. The aim is to convince at least one member, if not more, to support and patronize the cause, so to win favor among those that have decisional power, before the issue will be brought up to one of the future sessions of the City-Council.

At the same time, chapters also rally other environmental groups to take action on the same cause, so to present a united front that is more likely to make a compelling argument and achieve success. Meanwhile, they also file a formal request in order to have the topic brought on the City Council agenda for one of the next meetings, and they make sure to

assembly as many individuals, groups and community members that support the cause to speak and lobby for change and/or action.

Despite the fact that many of these lobbies efforts happen at the local level and that is very challenging for many environmental regulations to pass with no opposition, the Foundation also aims at changing policies at the wider level, targeting states and global governmental bodies, demanding for deeper intervention on their behalf.

Thus, campaigns for bans, levies or other initiatives focused on defending the environment and our oceans are not only carried out locally, but also state-wide, and at the federal and transnational level. This is the reason that motivated Surfrider to send some of its members and staff to Washington DC to meet with Senators and their staff to discuss federal priorities in the past[160], as well as motivating the organization to participate to other key events such as the Blue Vision Summit in DC in 2017[161], or the Ocean Recreation Hill Day this year, which both provided ample room for lobbying[162]. The same reason now just led the organization to launch a strong federal campaign in opposition to new off-shore drilling and driven Surfrider Europe to launch a transnational campaign across Europe to reduce the consumption of single-use plastics in 2013.[163]

Although the Foundation is strongly engaged in acting on multiple levels, lobbying processes often reveal to be a very hard task, either because governments have proven to be quite slow in catching-up and developing the needed awareness that prompts immediate intervention, or because of open opposition to the environmental group actions. This

[160] Stauffer, Pete. "Surfrider Visits Washington D.C. to Lobby for Federal Priorities." *Surfrider Foundation*, 7 Nov. 2014, www.surfrider.org/coastal-blog/entry/surfrider-visits-washington-d.c.-to-lobby-for-federal-priorities.
[161] Ibid.
[162] Surfrider Foundation. "Ocean Recreation Hill Day: Washington DC: Feb 15-16." *Surfrider Foundation*, www.surfrider.org/pages/6816.
[163] Surfrider Foundation Europe. "The Ocean Initiatives at the Heart of Surfrider's Lobbying Action." *Surfrider*, 25 Feb. 2013, www.surfrider.eu/en/the-ocean-initiatives-at-the-heart-of-surfriders-lobbying-action/.

opposition can derive from city-council members, or groups of business-men, developers, entrepreneurs and other influential citizens that have direct, economic interest in opposing the proposed environmental regulation, but also by normal citizens that simply don't like to be told what to do and don't understand the need for stricter legislation due to a lack of education on the issue. In this type of situations local governments are likely to not support any enforcement of green regulations so to not create political tensions and discontent among citizens.

The same mechanism described above is applicable at the state level, where however, an environmental-friendly regulation normally becomes a valuable proposal only after that it has already been tested on a diverse number of local realities (as in the case of the bag-ban in California.)

Due to their nature these types of initiatives might lead to any of the three goals (avoidance, minimization or mitigation), depending on the specific campaign and regulation that we consider.

III.D.4 Partnership with businesses, corporations and other environmental organizations (avoid, minimize, mitigate)

Another field in which Surfrider is trying to move further is the establishment of partnerships with other environmental organizations, private businesses and corporations that have an interest in protecting the environment.

An interesting case is represented by the collaboration with Parley for the Ocean, another non-profit engaged in ocean conservation, where Surfrider and many other environmental groups collected and gave to Parley all the hard plastic that was gathered during their beach-clean ups in 2017. This plastic thanks to the partnership that Parley has with Adidas, will then be turned into new pairs of shoes made of recycled-ocean plastic,

thus re-entering the market and giving new life to dismissed materials that were previously polluting the ocean.

Another interesting business partnership is the one established with Volcom, where Surfrider provides the brand with the Styrofoam collected on the beach, which gets then turned by the corporation into new surfboards and other items.

The logic at the base of these partnerships is therefore one that satisfies both mitigation efforts and the "3 Rs' waste hierarchy model" (reduce, reuse, recycle), promoted by the most popular conservation and pollution prevention theories. Both the partnerships mentioned above reduce the consumption of raw materials, recycling plastics that were previously discarded in the ocean, either due to intentional or accidental reasons.

Finally, another very interesting project was recently launched by the Foundation, the "Surf Industry Coastal Defender Program", whose main focus is the partnership between the organization and most of the Surf-Industry's leading brands. These partnerships are meant to limit plastic pollution and to encourage sustainable practices in these businesses, but also, more in general, to further promote the goals of the Foundation, finding more members, volunteers, sponsors and support. The "Surf Industry Coastal Defender Program," advocates for a deeper and more proactive collaboration among ocean-related surf-industry brands and Surfrider itself, which formalizes a long-waited cooperation among the business world and environmental groups in environmental conservation. This idea well connects with the concept of "blue economy", highlighting the major role that both conservation NGOs and the Surf Industry businesses should play in protecting our oceans, which are a major basin for the world's economy and the main force behind all the Surf Industry's profits. In addition, these partnerships also promote Surfrider's assumption

that a consistent reduction in the current rate of marine litter, cannot be achieved without the support and the mutual engagement of the business and industrial sector.

The "Surf Industry Coastal Defender Program" is a collection of thoughtful leaders who have aligned to fortify the Surfrider Foundation's mission to protect and enjoy our ocean, waves and beaches. Sharing the same love for the ocean and the surf that drives the Surfrider Foundation efforts, these businesses have realized that they have a stake in preserving the marine environment, as well as responsibilities towards the well-being of the ecosystems that enable their activity to profit and flourish. Indeed, if beaches are closed, the water is polluted, or surf breaks are lost due to coastal development, the surf industry as a whole would suffer the results of it. Strong impacts would not only be registered in the revenue bottom line, but also due to the loss of special places that are vital part of the brands' customer activities and at the base of the industry's purpose of existence as well.[164]

Thus, this program is particularly important because it gives surf industry companies the opportunity to give back to the place where they work and profit, supporting the Surfrider Foundation and its efforts in marine conservation, and establishing very innovative collaborations between the business world and the NGOs sector.

Partnership with other ENGOs, have proven to be a vital part of Surfrider's work and progresses as well. With the exception of the Parley's case, partnership with other environmental groups are normally established in name of specific public events or initiatives aimed at educating schools and the public, or when pursuing specific campaigns, policies or regulations that require a common and cohesive front among environmental organizations in order to move forward or win.

[164] Surfrider Foundation. "Surf Industry Coastal Defender." *Surfrider Foundation*, www.surfrider.org/pages/surf-industry-coastal-defenders.

These partnerships can be established with different types of NGOs, depending on the occurrence and the goal of the collaboration. Sometimes, they occur with other local NGOs, such as Orange County Coast-Keepers, Heal the Bay, or the young activist group of Heirs to Our Oceans, which are strong partners in South California and often team-up with the Foundation on particular local issues. However, Surfrider also collaborates with major leaders such as Oceana, Plastic Pollution Coalition, The Last Straw, Ocean Conservancy, Sea Shepherd, Changing Tides Foundation, Lonely Whale, and 5 Gyres on multiple issues and campaigns related to plastic pollution. Furthermore, when particular events or occasions require it. the Foundation also collaborates with "conservational giants" such as Greenpeace and the Sierra Club.

Thus, through multiple partnerships and efforts, Surfrider has conquered a leader position in the environmental world, shaping and promoting the debate around the plastic pollution crisis and ocean conservation. Together with other NGOs leaders, it now seats in the driving seat of this new movement that fight the rising tide of plastic. Together, NGOs, activists, environmental conscious citizens and businesses have helped the global community to achieve the current status of "traction and momentum" around the topic.

III.D.5 Rise above plastics (avoid, minimize, mitigate)

Rise Above Plastics is a program completely dedicated on avoiding, minimizing and mitigating the effect of plastics on our environment. It's mainly based on asking and encouraging Surfrider's members, volunteers, and common people to take the lead in raising awareness about the dangers of plastic pollution, while advocating for a reduction of single-use plastics and the recycling of all plastics at home, school, work and within the entire community.

People are encouraged to seek alternatives to plastics, avoiding in particular plastic bags and polystyrene and making ample use of reusable items so to avoid or refuse single-use plastics. If you must use plastic, the program invites you to choose PETE or HDPE plastics, which are the most commonly recycled plastics. Nevertheless, recycling of plastics, when feasible, is always a preferred option to landfill. Participants to the program are also encouraged to support single-use plastic bans and bottle recycling bills, in addition to spreading the word and creating programs for plastic consumption reduction at school or work, or promoting plastic reduction ordinances within the local city council.[165]

III.D.6 Education (avoid, minimize, mitigate)

Finally, the biggest and most successful action in which Surfrider invests most of its time and resources, making it an intrinsic component to any of its programs and the main purpose of each one of its activities is education. Education appears to be the real goal and one of the main determinant component for the Surfrider Foundation to make a dent in the wicked problem of plastic pollution.

The real value behind Surfrider's influence and victories (both within and beyond the legislative framework) is the ability of the NGO to engage the local community and to create a concrete change in people's behaviors and mind-sets, through strong educational programs, activities and a constant focus on raising awareness among people, businesses, industries and governmental institutions on the fact that we are all active, responsible and very determinant actors in the plastic pollution issue. The message launched by the ENGOs is above all a message that calls for immediate intervention of all the different stakeholders, but it is also a message directed to people as members of a community that should prioritize

[165] Surfrider Foundation. "Rise Above Plastics." *Surfrider Foundation*, www.surfrider.org/programs/rise-above-plastics.

and value the protection of the eco-systems in which they live. People are given power through education and awareness, power to change their own behavior and power to start demanding immediate intervention from other actors and stakeholders. This is the real hidden influence that education, and consequently, the Surfrider Foundation, have. The ability to set in motion a bigger mechanism, that from the local level and a passionate engagement of the community, is able to gain traction and scale up, affecting state and federal policies, creating momentum and bringing together different communities that are fomented through the same process, having the potential to finally affect the transnational and global level, as well.

Besides integrating the educative component into every initiative, Surfrider also engages in activities that explicitly target education, such as special events, presentations, movies or documentary-nights, meant at teaching particular environmental lessons or at focusing on specific topics.

Visits and mini-lectures to local schools are also part of the Foundation's work. Students are provided with an overview of what Surfrider is tasked with, and which are the most pressing issues for the ocean from an environmental point of view. Educational material of any kind, which is normally available both online and at any Foundation's event (brochures, videos, charts, pictures, animated cartoons about plastic pollution and so on) is also provided to students and used to explain them the major threats and actions that can be taken to protect our oceans.

Finally, the Huntington Beach and Seal Beach chapter is deeply engaged in establishing very close relationships with its surf-clubs, that the Foundation sponsors in different high schools. These clubs, indeed, are an incredibly valuable basin of young volunteers who are extremely excited to participate, volunteer and help to organize and run

most of the chapter's activities. Many young participants join the club more for the environmental experience and education that these clubs provide, than not for a surfing purpose. Thus, Surfriders's high schools' clubs are an extremely valuable channel and opportunity to educate the younger generations, informing and positively influencing their minds, and turning them into passionate ocean activists and environmental leaders of tomorrow.

Finally, in its efforts to educate the public and offer people a plan of action of the things they can do to help the cause, Surfrider Foundation compiled a list that suggests the top-ten individual actions that everybody can take in order to limit their plastic footprint and help reducing plastic pollution. The following are the ten daily steps we should consider to implement: 1) refuse single-use plastic whenever possible; 2) bring with you a reusable plastic bag to the store; 3) carry a reusable water bottle, using refilling stations; 4) use a travel-mug when ordering coffee to-go; 5) resist the urge to wrap every product in plastic bags; 6) skip straws and stirrers and avoid plastic utensils; 7) take a reusable food container for lunch, so to avoid take-away packaging; 8) buy products in bulks to cut down on plastic packaging; 9) attend a beach cleanup: the more plastic we keep off the beach, the less plastic will enter our ocean; 10) if you must purchase plastic, make sure to recycle it.

Other individual actions might help as well, such as deciding to shop at grocery stores that don't make use of extensive packaging, take the lead in campaigning, raising awareness about plastic pollution among family members and friends and engage in conversations about the issue with your favorite restaurant, supermarket, etc. This will help to keep the debate going on how each different actor has responsibilities and should be held accountable for the current crisis.

IV CONCLUSIONS

As shown in this study, the ocean plastic pollution crisis can easily be classified as a wicked and intractable problem, due to its many complications and the fact that there seems to be no easy solution or alternative to its current consumption and waste generation rates. Plastic is a material that has become so embedded and irreplaceable in our daily habits and life-styles, that is hard to imagine a world which does not depend on it.

However, by deconstructing the problem and analyzing it in its many components, it is possible to draw a clearer scheme of the phenomenon, understanding it better and being able to elaborate some "responses" which could improve the status of our oceans' health. Thus, by breaking the problem into its main actors, its many facets and implications, its most common causes, its main pollutants (most common items retraced during beach-clean ups activities) and so on, it is possible to "deconstruct" the big picture in smaller frames, each one reflecting a particular reality of such a complicated phenomenon. In this way, it is easier to identify the gaps and areas in which there is space for improvements and to provide a plan of action that could effectively lead to a reduction in current pollution rates.

Among the main findings of this research is a confirmation of the idea that in order to solve this crisis we cannot prescind from a reduction in consumption and waste generation in the plastic realm. Avoidance is the first solution we should always try to implement, from which the effectiveness of all the other solutions depends as well. Thus, despite the high number of beach and harbor clean ups that Surfrider and many other NGOs organize periodically, limiting consumption remains the goal and most important educational message that they are pursuing. Avoidance can be achieved through a change in personal behaviors, new legislation that implements bans and fees on single-use plastic products, incentivizing people to switch to reusable or greener options, or through measures

such as return deposit schemes for drinking containers, not using packaging when avoidable, etc.

Another important finding regards the type of impact that the Surfrider Foundation can have on plastic pollution. From what I could observe during my internship, this non-profit has two main goals: education and lobbying. Thus, its potential impacts are strictly related and derived from these two purposes. Surfrider's main influence is thus externalized in its ability to affect people's behaviors and mind-sets through education, as well as impacting local and state-wide regulations, through pressures and awareness mechanisms exercised on different levels of governmental institutions. However, if education seems to be successful, achieving many positive results in its communities, as well as winning the support of some businesses and industries, the lobbying process has proven to be extremely lengthy and challenging, with changes in local and state legislation being very hard to achieve. Finally, when this happens, such legislative victories are often the result of joint efforts implemented by partnerships and coalitions of different NGOs and environmental groups, that should therefore be incentivized and pursue more often. Presenting a united front can indeed provide a much more compelling argument for city-councils and state institutions, thus resulting in wider chances of achieving policy changes and stricter environmental regulations. This type of coalitions and joined efforts have already demonstrated their efficacy achieving substantial state-wide and transnational results such as the already-mentioned California Bag-Ban case or the new proposal on reducing single-use plastic that has recently been issued by the European Union, and many more at the city-level.[166]

[166] European Commission. "Press Release. Single-Use Plastics: New EU Rules to Reduce Marine Litter." *European Union*, 28 May 2018, europa.eu/rapid/press-release_IP-18-3927_en.htm.

Finally, my research makes it clear that plastic pollution is a very complex and multi-facets issue. Thus, the responsibility of the current crisis is not attributable to one player only, but it is shared among different actors. First, it derives from governmental inability to issue effective legislation that address accidental debris and mismanaged waste, as well as intentional litter. Governments are also at fault for their absence in promoting a stronger education and awareness on the topic. Second, the lack of an approach that supports more ambitious "extended producer responsibility" policies, a switch to industrial ecology, and new industry and business models that incentivize waste reduction and more sustainable practices have played an important role too. Lastly, consumers and the public are at fault as well, perpetuating today's life-style and behaviors that incentivize a "to-go and disposable culture" which leads to overconsumption and a lot of avoidable waste and engaging in littering behaviors and wrong waste disposal practices that deeply affect our eco-systems.

Therefore, if we are looking to reduce the amount of plastic entering the ocean each year, solving the current crisis and switching to long-term and sustainable models, everyone needs to do their part in lowering their plastic footprint. A better integration and coordination among the main stakeholders and different actors is needed, means and goals need to be aligned, and governments, non-profits, environmental groups, industries and businesses need to support each-other and converge their efforts, while striving to achieve a short term, well-defined, concrete, and common plan of action to defeat this rising tide of plastic.

Plastic began to be mass-produced after the second War World, in the 50s, and before that, alternatives to its massive overconsumption used to work just fine. Certainly, the advent of plastic revolutionized our consumption models and way of life in a radical way, in many cases for the better, but it also came with extremely degrading consequences for

the world we live in, especially our oceans. The promotion of a throw-away, disposable culture is not bearable anymore. The miraculous features that defined and determined the success of plastic, meaning its cheapness and durability, turned into one of the biggest curses and the most pressing environmental crisis for the history of human-kind. It takes only a few minutes to open and consume a snack-package or utilize a straw and both the package and the straw will immediately get thrown away as soon as they exhaust their functionality. However, it will take the earth thousands of years to entirely decompose each single-use plastic item. What is even more concerning is that whereas sun and sunlight can cause plastics to physically break apart in infinitely smaller units, chemically the hydrocarbons linked together into the polymer chains of which plastics are made and do not spontaneously decompose into other compounds.[167] Therefore, in normal conditions plastics simply accumulate in the environment. Plastics that entered the ocean will therefore disappear from our sight but continue to pollute our water and our food-chain for thousands of years, with the potential to damage our own health as well.

Smaller particles, in fact, are likely to cause even wider damage to the eco-systems and marine wildlife, due to their ability to be exchanged for food by animals, thus making their way up through the chain food, to finally end, in our plates. Due to all these reasons, the proposal observed earlier of a possible switch of categorization of certain types of plastics into hazardous materials should also be taken into consideration, despite its current unlikeliness to be approved.

Fortunately, as shown and analyzed in the previous chapters, current times seem to be witnessing an extremely receptive moment for the topic, as has been confirmed by the

[167] "The Known Unknowns of Plastic Pollution." *The Economist*, The Economist Newspaper, 3 Mar. 2018, media.economist.com/news/international/21737498-so-far-it-seems-less-bad-other-kinds-pollution-about-which-less-fuss-made.

recent proposal of the European Union to take action against single-use plastics, probably the first one of its kind at the transnational level[168]. This incredible turning-point demonstrates that thanks to the hard and extenuating work of many NGOs, scholars and activists all around the world, not only individual people, but also certain governments and businesses are starting to recognize and acknowledge the need to intervene.

Thus, education and awareness programs, together with direct campaigns and activism have allowed Surfrider and its ENGOs partners, together with other coalitions of green movements all around the world, to achieve legislative victories on a series of different subjects related to plastic pollution. Usually, these successes are firstly achieved at the local and city level, where they represent an extremely relevant achievement, but they have the potential to spread to other areas and neighboring cities throughout the region as well. Similar regulations inspired by the local level can in fact get approved at the regional and national-level too, often as an outcome of the pressures that numerous local victories on the same issue have built on neighboring governments, or as the natural consequence of a widely-felt discourse and global momentum on the topic. Just very recently, indeed, similar mechanisms have proved effective, demonstrating their ability to affect the transnational level as well, as the European Union's new proposal testifies.

What will happen next and the approach that other governments, industries and businesses around the world will take in response to this "wave of consciousness and awakening" will be extremely decisive and crucial. Thus, the present time is extremely delicate in determining whether substantial changes and a radical inversion in current

[168] European Commission, 2018

consumption behaviors and waste management and generation will be imposed and achieved in time, or if we will miss once again the opportunity to take drastic action.

IV.A. Recycling and bio-plastics: false solutions or future green actions?

Two topics that must be debated and addressed with a lot of caution, when discussing them in relation to their potential positive effects on plastic pollution reduction, are recycling and bio-plastics. These two have been categorized as "red-flags" due to a rebound effect[169] that might sometimes stem from them, doing more harm than good to the environment. However, despite the fact that this perspective is widely acknowledged within the organization, it is not widely publicized among public consumers. I believe that the Surfrider Foundation opted to not insist too much on these negative aspects of the practices when engaging with the public, due to educational constraints. In fact, considering that environmental activism is already complicated per se and that only recently have people started to be receptive to an increased engagement in sustainable practices, warning people of the potential misconceptions that hide behind recycling might lead them to not engage in recycling efforts at all, which is definitely not the goal of this critique. Nevertheless, the collateral effects that can derive from a "mythization" of recycling and bio-plastic alternatives as inherently green practices will be discussed here in order to offer greater clarity on the future of plastic pollution and on the fact that the only green behavior is avoidance.

Bio-plastics, or more precisely bio-based polymers, according to recent studies, have for long time been marketed and promoted to be much greener than what they actually are. Their name is misleading because it suggests that any polymer derived from biomass is environmentally friendly. Instead, a polymer derived from bio-mass does not imply any

[169] Defined in green marketing as an increase in demand or consumption rates as a consequence of the introduction of more efficient and environmentally sound technologies.

superiority upon its nature with respect to the environment, unless the comparison of the respective life cycle assessments is favorable.[170] Life cycle assessment studies on these materials have showed that many of the so-called bio-plastics require industrial composting facilities to be composted and that in stable landfill conditions, they do not degrade in a consistent shorter time than normal plastics. Thus, this type of initiative might be marketed by corporate giants such as Coca-Cola, that recently launched its new PlantBottle packaging, and many others, as a viable solution to reduce plastic pollution, but the truth is that given the current technology and evolution of bio-plastics, they still embody a false-solution. Indeed, they cannot be substituted for the need of reducing our overall plastic consumption, and they might even risk minimizing the severity of the problem and the urgency to implement stricter solutions. Sometimes, they might even stimulate consumers to increase their plastic usage, misleading them into believing that bio-plastics will biodegrade without further impacting the environment, when in most cases this is not true.

The same character of "false solution" has been attributed to recycling. The difficulty of coming up with solutions that present no fallacies or back-lash effects, is proven by Liboiron's argument, which contests the undeniable eco-friendly nature of the practice of recycling, often widely recognized as the first and most easy to adopt solution that each one of us should engage in, in order to oppose high plastic consumption and waste. According to Liboiron, recycling is not always good for the environment and might sometimes pose the risk of being perceived as a "false solution" itself. Instead of being beneficial to the environment, in fact, recycling might sometimes constitute a crisis of meaning that allows environmental degradation and derisory waste practices to continue. Thus, recycling can occasionally be associated with negative impacts as well: it requires

[170]Vert, Michel, et al. "Terminology for Biorelated Polymers and Applications", *Pure and Applied Chemistry*, 2012, Vol. 84, No. 2, pp. 377-410. http://dx.doi.org/10.1351/PAC-REC-10-12-04

higher expenditures of energy than virgin materials, it produces pollutants, greenhouse gases and waste. It creates products that are down-cycled, because they are less robust than their predecessors, and which are usually not recyclable themselves. Moreover, of the 15 to 30% of recyclables retrieved from the waste stream, almost half are buried or burned due to contamination or market fluctuation that devalues recyclables over virgin materials. Finally, recycling infrastructures create a framework where disposables become naturalized commodities, instead of incentivizing practices of waste redesign, reduction or elimination. Recycling, according to Liboiron, is thus promoted recurring to abstraction from its context and to a reframing in terms of the assumptions and interpretative rules of the advertising framework.[171]

Unfortunately, as a result, recycling comes to represent a message that does not really reflect its reality, and instead of being represented as an industrial process or a form of waste management, it is sponsored as a form of environmental activism in general. This not only happens at the expenses of more preferable solutions in solid waste management, such as reduction, redesign or reuse[172], but might also lead to unintended consequences were consumers feel authorized in consuming more single-use products and produce more waste, because of their "environmental-friendly engagement in recycling". Thus, they end up producing more negative consequences for the environment than positive ones and promoting consumers choices that are in contrast with the initial goal.

Therefore, recycling is truly effective and green only when it leads to a substitution of the virgin materials with recycled materials without causing an overall environmental impact which is greater than it would have been using the virgin materials. It is also fundamental that recycled materials get used for everyday objects that customers would

[171]Liboiron, 2010, pp. 1-2
[172]Ibid, pp. 6-8

have purchased anyway, and not into purposeless items that will only stimulate additional and futile consumption, soon turning into waste again.

Other false or weak arguments have been created to "protect" the immanent role of plastics in our daily life. For example, the idea that replacing materials such as wood and glass with plastic to make goods lighter, helps to address climate change, which is not always true. The benefits must be balanced against the negative impacts of plastics so that plastics are used only when they have smaller carbon and ecological footprints than alternatives.

Others may argue that in the current global economic crisis, nations cannot afford to regulate an industry that, in the United States alone, is worth US$1 trillion and employs 1.1 million people. Yet, dealing with plastic waste is very costly; removing litter, most of which is plastic, from the west coast of the United States costs taxpayers $520 million each year. Also, the production of safer materials would spur innovation and boost employment in research and development.[173]

The same type of psychological mechanism that risks capitalizing on recent innovation turning it into "a false solution" might be applied to the new enzyme that has been discovered in Japan, the so called "eating-plastic enzyme" that will "help solve the crisis of plastic pollution"[174]. Besides the fact that the enzyme is still at a very rudimental and experimental stadium, and that it will take a very long time, if it ever becomes possible, to make it available on an industrial scale, the bacterium cannot solve the global plastic

[173]Rochman, 2013, p. 171

[174]Gabbatiss , Josh. "Scientists Accidentally Created an Enzyme That Eats Plastic and It Could Be the Answer to Our Waste Crisis." *The Independent*, Independent Digital News and Media, 17 Apr. 2018, www.independent.co.uk/news/science/plastic-eating-enzyme-pollution-solution-waste-bottles-bacteria-portsmouth-a8307371.html.

pollution crisis on its own[175]. It might facilitate recycling processes, for sure, but if we don't start consuming less plastic and changing our habits, the crisis will never be fully solved. Thus, feeding discourses of this type may actually do more harm than good to the environment, and simplistically dismiss all the other efforts and fights that have been fought for a very long time, such as the establishment of bans on the most polluting single-use plastics and the encouragement of a reduction in the consumption of plastic items in first instance.

The same logic must be adopted when talking about new machineries and technologies, aimed at "cleaning" ocean waters and reducing the extension of the "ocean gyres", such as "TheOceanClean-up[176]" or "The Manta Boat" by the Sea Cleaners[177]. While these are undoubtedly important steps in the right direction, their potential to mislead people in believing that all the other efforts are not a priority anymore should not be overlooked. It's important to stress the fact that while these are additional efforts to achieve a common goal, a change in behaviors and a reduction in waste generation is absolutely vital, considering that more than 8 million tonnes of trash are washed or discarded in the ocean every year and only an approximate 1% of it is collectable in the water, while 94% is expected to have sunk on the bottom and 5% to wash up on beaches.[178]

People, businesses and governments, therefore, should not consider all the above mentioned "solutions" as shortcuts to avoid the crude reality: stricter regulations, bans, taxes, levies and fees are necessary in order to reduce the general consumption and waste

[175]Carrington, Damian. "Scientists Accidentally Create Mutant Enzyme That Eats Plastic Bottles." *The Guardian*, Guardian News and Media, 16 Apr. 2018, www.theguardian.com/environment/2018/apr/16/scientists-accidentally-create-mutant-enzyme-that-eats-plastic-bottles.
[176]Ocean Cleanup. "Technology." *The Ocean Cleanup*, www.theoceancleanup.com/technology/.
[177]Sea Cleaners, "The Manta : The Boat That Cleans the Oceans." *The Sea Cleaners*, www.theseacleaners.org/en/the-manta-boat-2/.
[178] Sherrington, 2016

generation around the world, while better management-systems are necessary in countries where they are lacking. On top of this, education is the first path that must be followed to educate and raise awareness both in adults and younger generations, incentivizing people to take responsibility, and encouraging them to demand that businesses and governments do the same, so that NGOs conservation efforts can effectively turn into long-lasting and direction-shifting policies. On this scope, education on environmental and ocean-related issues, including ocean plastic pollution, should be improved and implemented not only through the environmental NGOs action, but through many other channels, especially schools. If the goal is to create a positive and concrete change for the future, subjects such as ocean and environment conservation, how to minimize our impact, eco-friendly and responsible behaviors, how to minimize our waste, correct recycling practices, etc., should all be part of every school curriculum. The new generations could then grow up with a better understanding of the unsustainable waste models we are perpetuating and of how responsible each one of us is towards the degradation of our oceans and environment. They might even teach something to their parents too. Moreover, since educating the new generation will not be enough, there is still a lot of work to do in educating staff and employees during orientations days or organizing sustainability-seminars, so as to foster new trends and approaches in the business sector as well. Indeed, while green-awareness trends are changing among millennials, the rest of the society is still playing catching-up. Public events and other initiatives are therefore important and need to be organized in order to educate the wider public. These initiatives, together with more TV shows, documentaries and movies that as demonstrated by “Blue Planet II”, have a strong potential to stimulate and stir the conscience of the public on pressing current issues.

Education is the first key to change, and we should take advantage of its massive role in shaping people’s ideas and behaviors.

IV.B. Limits to the research and future studies

The biggest limits to this research are represented by time and resources constraints.

It is important to remember that my findings and the empirical chapter are exclusively a result of the months I spent working for the Surfrider Foundation in the Huntington Beach and Seal Beach chapter, and therefore, they are reflective of the reality of a specific non-profit, and even more specifically, of a precise chapter. A more complete and extensive study should be conducted on a wider range of environmental organizations, comparing their similarities and differences in structure, initiatives, efficiency and results and also their relationships and levels of partnerships with different levels of government (local, state, federal, international and global) including their potential ties and common goals with international and global political entities such as the UN and/or similar bodies. What has been demonstrated true and the "norm" for the Surfrider Foundation might not be generalizable beyond the analyzed case or be applicable to the wider NGO sector in its totality. Other NGOs might indeed prioritize different functions and lead to different findings, thus making my research only applicable to the specific-case and missing external validity.

Moreover, additional limitations are derived from the choice of the study-case and from time and resource constraints of this research project. Indeed, despite the Surfrider Foundation having a global outlook and different chapters spread around the world, the most active regions in which it operates are the United States and Europe, and even among these two, considerable differences in programs, operations and management subsist. Therefore, it must be taken into consideration that my analysis is based solely on the reality I experienced, mostly that related to the NGO's work in Orange Country, California and within the United States. The processes that I personally observed are then compared to

other similar cases around the world. Most of them, however, especially those concerning the mechanisms that drive an evolution in the legislative framework, from local to state-wide action, are mostly referring to examples coming from developed countries. Similar examples might exist in developing countries as well but were not researched in this analysis.

Future studies that compare grassroot NGOs' actions and their influence on the evolution of the legislative framework within developing countries would therefore be very interesting. Departing from the same premises and categories of main actors and observing how the reality of developing countries might present similarities and/or differences, would be extremely valuable to verify if some of the findings that resulted from this analysis would still hold true, or if other mechanisms, determined by the different reality, become apparent.

Also, another interesting subject for future studies would be focusing exclusively on a more extensive and detailed analysis on the role of different types of businesses in relation to plastic pollution. Possible research questions might be the following: How and in which percentage do different types of businesses affect the level of plastic pollution and which categories turn out to be the biggest polluters? How much power do environmental awareness and greener program hold and can they effectively translate into a reduction in the volume of plastic pollution? It might be discovered that particular sectors require more attention and intervention than others and that particular strategies and business measures are more effective than others at preventing pollution.

Finally, during this research, I realized that other limitations both of structural and cultural nature might be associated to the Surfrider Foundation's work and its effectiveness. From what I could observe, indeed, various limitations of organizational, management,

efficiency and coordination nature come with the fact that this NGO strongly depends on its volunteers. Unfortunately, despite the incredible passion and dedication that volunteers show, the fact that this is an unpaid activity, prevents it from achieving the maximum efficiency, consistency and the accomplishments that a similar non-profit where people are paid for the work they are doing, with all the related consequences, could achieve. Surfrider, indeed, inevitably suffers from high turnover rates in volunteers, weaker commitment among people that have not been part of the chapter for a long time and don't feel as engaged in the cause as others, and, therefore, a limited possibility to develop a very effective, organized and goal-oriented plan of action. This is due to the fact that all of the programs and chapters' work is volunteered based, many times the people working on different issues change fairly often, or cannot guarantee their constant commitment, especially when a particular project extends over a longer course of time.

Moreover, other minor challenges occasionally rise within the communication channel between chapters and headquarters. Indeed, the fact that chapters and the volunteers are the real drivers and working force behind the organization, but at the same time, they have to conform and accept decisions by the headquarters, can sometimes lead to some frictions. This can happen when a particular "corporate" decision appears to be "disconnected from the chapters reality" or from the preferences of the individual chapters', interfering and leading to potential stagnation and delay in the work and programs development of the latter. Thus, the "subordination" status of chapters to the headquarters can potentially affect drive and dedication of the volunteers, leading to temporary inertia in particular programs or initiatives that need to be re-adapted to new regulations or decisions that do not always feel "democratic", consequently affecting working profitability and success.

An example of this, is the fee that headquarters have recently decided to impose on the restaurants that want to join the Ocean Friendly Restaurants Program. In my opinion, this works as a drawback and disincentive for businesses to commit to eco-friendly initiatives, making it harder for chapters to accomplish any result in this initiative. In fact, it is already financially-demanding for businesses to commit to switch to more eco-friendly options and substitute single-use plastics, and a new membership fee on top of that, will only act as an additional financial obstacle, discouraging more businesses with the right intentions from joining the cause. Moreover, considering that the Ocean Friendly Restaurant certification is exclusively a Surfrider initiative that is not officially recognize by any bigger entity (e.g. Green Restaurant Association or the Sustainable Restaurant Association) I found this a very controversial decision, which might not result in progress on meeting the organization's goals.

Finally, another limitation that Surfrider needs to overcome, is the fact that the Foundation's image has commonly been associated with a Caucasian, middle-age and fairly wealthy volunteering basin. Despite this not being true in the chapter where I have been working, it is somehow the appearance that many other chapters still seem to be giving. I assume that this perception might result from historical factors, and the fact that the Surfrider Foundation was born out of a surfer community in Malibu, where this standardized image of the average member, which is still perceived as the common reflection of the organization basin, resembles that of the stereotypical surfer.

This prejudice, however, affects and poses limits on important exchanges of information and awareness that the Surfrider Foundation is trying to establish with the totality of American multi-ethnic communities. It is important to work on inclusion issues, developing material in other languages too, and extending the non-profit outreach to

different sub-communities and cultures, using schools as the first channel through which it is possible to approach the widest spectrum of people from our society and their families.

At the same time, we need to consider that generally, environmental movements and concerns, are often associated to an activism network of quite wealthy people. People with higher incomes are in fact more likely to opt for products and alternatives that return a higher environmental value, despite the fact that they also normally require more time, money or efforts (return-deposit facilities, supermarkets where you need to bring your own recipients, eat in the restaurant instead of ordering to go, higher costs of green products and services, etc.). The same logic can be applied for volunteering efforts. Wealthier people are indeed more likely to dispose of free time that they can dedicate to such activities, without having to work a second job, over-time, etc.

Therefore, it is not only a particular need of the Surfrider Foundation to have to extend this mind-set to different people and different cultures, but a necessity that domestic and international green movements in general are facing. Increasing the convenience and number of green alternatives offered to consumers is probably one of the first needs, together with a more extensive outreach process by environmental group to educate different kind of publics on today's most pressing environmental issues, in order to make it easier for new sustainable models to conquer a larger audience.

To conclude, the last limitation was also the biggest motivation that kept me passionate, challenged and highly inspired in pursuing this topic. Though the first environmental concerns about plastic pollution and its presence in the ocean started a long time ago, the issue seems to have achieved a "major momentum" only very recently, becoming a hot-topic of major interest and sensitivity over the last year. Thus, it was very hard for me to find updated academic material on most of the topics treated in this study,

especially in reference to the way that grassroots movements and NGO work and how is it possible for them to make a dent in ocean conservation. Often, when published, plastic pollution studies only contained data, numbers and facts referring to what has been happening and the severity of the situation. Most of the time, these numbers were not even up-to-date. Moreover, it was extremely hard, if not impossible, to find a comprehensive study which included suggestion for future policies and an analysis of how the concerning future trends of plastic consumption and waste generation can be halted, if not inverted. Thus, many times, I had to rely on newspaper articles, since more "trustworthy" sources on the topic were missing, in order to use the most current information in my effort of delivering a comprehensive study of how a local and volunteer based grassroot non-profit can make a dent in the wicked problem of plastic pollution through the power of education and changing legislation from the local level all the way up to the global one.

IV.C. Looking towards the future

Looking at the future, a case that is particularly interesting to analyze, is that of the UK, because it could lead the way towards more integrated approaches of governments and businesses in tackling this crisis and set an example for other governments of strict requirements for ocean and environmental conservation.

Shortly after Theresa May announced that the country will soon ban all plastic straws, q-tips, drink stirrers and other single-use plastics utensils, a new agreement was reached in the UK, with 40 major businesses and corporations in the country, which have pledged to eradicate single-use plastics from their packaging in an effort to tackle the global pollution crisis.[179] This pact, which took the name of UK Plastics Pact, it's undeniably a step further

[179]Gabbatiss, Josh. "More than 40 Major UK Businesses Have Said They Will Ban Single-Use Plastics." *The Independent*, Independent Digital News and Media, 23 May 2018, www.independent.co.uk/environment/plastic-ban-uk-business-pact-pledge-single-use-a8322156.html.

and a “first radical move” where a major nation-state and transnational corporations pledged to come together to resolve one of the biggest environmental issues of the current times. However, although it has the potential to become a major turning point, environmentalists still haven’t won the battle. On one side, indeed, the measures taken by the UK might constitute a salient watershed in dealing with plastic pollution, proclaiming the country as the first state to take a massive and effective stance on it, and officially bringing together different actors in the fight against the current plastic crisis. However, what could potentially be a template for other countries, able to spark a “global movement for change”[180], might also take a darker turn.

The controversy, in fact, lies in the fact that the pact doesn’t set any clear preference for one type of solution over the others. Indeed, the agreement consists of a series of targets that the industry as a whole will aim to meet by 2025. These include the complete elimination of “problematic or unnecessary” single-use plastic packaging by developing new designs and alternative delivery methods, which would ensure a massive reduction in the consumption of plastics, thus meeting environmentalists’ demands and their highest hopes. However, the pact also includes other minor targets such as the requirement for all plastic packaging to be reusable, recyclable or compostable, or ensuring that at least 70 per cent of packaging that is used makes it to recycling or composting facilities. Should the latter be the chosen and preferred solution by the majority of the businesses, given the fact that it is easier to adopt, it is evident that the pact would not lead to the same radical change and plastic reduction achievement that could have been accomplished by the first solution. The problem would not be addressed at its source, and a major opportunity for radical change would be lost. Businesses, indeed, would only be required to make sure that their packaging can be recycled, but it wouldn’t reduce the actual consumption of plastic

[180] Ibid.

materials. Thus, despite a commitment to ensuring 30 per cent of the content of all plastic packaging comes from recycled sources by the target date, the agreement would only lead to a partial reduction in the volume of virgin plastics that are used for new production, but it would not mark an essential and needed shift from the current models.[181] Moreover, the promotion of "recycling and composting" as solution to the plastic pollution crisis has been associated with even bigger negative consequences, as already discussed.

The fear is thus to see this extremely delicate and life-changing moment, which could lead to a major change in current consumption and waste-generation habits, inspiring other governments to follow, to fail once again in a compromise with the interests of domestic and transnational industries and businesses. A compromise that asks to settle for solutions that will mislead the public in thinking that the new model is sustainable, when it is actually not considerably better than the old one. A compromise that instead of prioritizing real and concrete solutions that could lead to substantial reductions in the volume of plastic that is consumed and turned into waste each year, protects the monetary interests of governments and businesses, sacrificing higher environmental standards.

UK's choice of which path to follow, might also influence similar legislation and future standards in other countries, thus proving to be a potential mile-stone or an eventual lost-opportunity not only on the domestic level, but for the whole global community.

Similar if not bigger promises, lie in the proposal just recently made by the European Union to issue new rules that would target "the 10 single-use plastic products most often found on Europe's beaches and seas"[182], which represent the 70% of marine debris found

[181] Ibid.
[182] European Commission, 2018

on European beaches. If passed, these new regulations could mark a major mile-stone and a big success in plastic-pollution related legislation.

The premises are very hopeful and promising. The EU, indeed, stated that different measures will be introduced. Bans will be applied to certain products, when alternatives are readily available and affordable, such as for plastic cotton buds, cutlery, plates, straws, drink stirrers and sticks for balloons. All these items "will all have to be made exclusively from more sustainable materials instead"[183]. Moreover, reads the proposal, "single-use drinks containers made with plastic will only be allowed on the market if their caps and lids remain attached". Other measures will target consumption reduction targets, imposing on Member States a reduction in their use of plastic food containers and drinks cups. Different alternatives are suggested: "they can do so by setting national reduction targets, making alternative products available at the point of sale, or ensuring that single-use plastic products cannot be provided free of charge". In addition, the EU also targets another of the main actors mentioned in this thesis, by proposing new obligations for producers. Producers will indeed "help the costs of waste management and clean- up, as well as awareness raising measures for food containers, packets and wrappers […], drinks containers and cups, tobacco products with filters […], wet wipes, balloons, and lightweight plastic bags." The governments will also provide incentives to the industry to develop less polluting alternatives for these products. Finally, the European Union will require Member States to collect 90% of single-use plastic drinks bottles by 2025 (e.g. through deposit refund schemes) and will require certain products to have a clear and standardized labelling which indicates how waste should be disposed, the negative environmental impact of the product, and the presence of plastics in the products. Last but not least, awareness-raising measures are also included in the proposal: "Member States will be obliged to raise consumers'

[183] Ibid.

awareness about the negative impact of littering of single-use plastics and fishing gear as well as about the available reuse systems and waste management options for all these products."[184] Severe producer responsibility schemes for fishing gear containing plastic will also be implemented, asking producers of plastic fishing gear to cover the costs of waste collection from port reception facilities, its transport and treatment, and the costs of awareness-raising measures.

In conclusion, so far, the European proposal appears as very comprehensive. It seems to address all the major points that have been made in this thesis and the majority of the solutions that were here offered as potential responses to the plastic pollution crisis.

However, while assuming and hoping that it will be implemented, it is still too soon to assess its effectiveness and its ability to hold true to its commitments. Nevertheless, it remains an immense step forward that raises hopes among all the NGOs, activists and environmentalists around the world for future interventions in other countries as well and a brighter future with cleaner oceans.

I hope that the content analyzed in this thesis can shine some light on the processes and the work that characterize the Surfrider Foundation and its efforts in contrasting the rising ide of plastic pollution.

I personally believe that many of the mechanisms observed during my internship and this research are the same ones that determine and influence the work of many other ENGOs, non-profits and grassroots organizations engaged in topics of ocean conservation and environmental protection. Most of the stakeholders, obstacles and opposition forces that Surfrider has to face and relate to daily, are indeed common to other major ENGOs, similar environmental issues and other environmental campaigns. Thus, at least for what

[184] Ibid.

concerns the working procedures to educate communities, raise awareness on a particular topic and achieve small victories in influencing environmental-friendly legislation, Surfrider's apparatuses and processes could well or similarly portray the functioning of other conservational NGOs in the wider framework. Nevertheless, each NGO might be different in its main goals and the path it chooses to achieve them and different communities in different cultures might develop and be receptive to different mechanisms as well. Further studies are therefore needed to compare mechanisms and NGOs functioning in ocean conservation issues.

To end, considering the impact and role that developing countries have in producing plastic pollution, would be equally important to analyze if the mechanisms and processes observed in this study can be replicated, or have perhaps already been implemented by local NGOs in those countries registering the higher rates of pollution and mismanaged waste.

Indeed, only combining and collaborating on plans of actions from different hemispheres we can truly work on a global strategy able to dismantle plastic pollution once and for all.

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